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ACQUISITION STREAMLINING

by

Maryelizabeth Walsh

December 1986

Thesis Advisor:

Paul M. Carrick

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management initiatives and procedures to reduce the cost and improve the quality of equipment and systems procured by the Department of Defense.

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Acquisition Streamlining

by

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Captain, Ordnance Corps, United States Army
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ABSTRACT

Acquisition streamlining involves taking action to preclude or eliminate non-cost-effective requirements in design, development and production. It is based on the concept that by applying pertinent contract requirements and allowing early industry involvement in recommending the most cost-effective solutions, the Department of Defense can reduce the cost and/or time of system acquisition and life cycle cost without degrading system effectiveness. This thesis focuses on the Streamlining Initiative, its background and composition, where and how it has been utilized, and when and how it can be applied to achieve the least cost acquisition. The study looks to two of the military services, the Army and the Navy, and how they each have approached streamlining. Specifically, the thesis looks at the Army Streamlined Acquisition Program (ASAP) and the Navy T-45 Training System as current management initiatives and procedures to reduce the cost and improve the quality of equipment and systems procured by the Department of Defense.

TABLE OF CONTENTS

| | | |
|------|--|----|
| I. | INTRODUCTION ----- | 7 |
| II. | THE DEFENSE STANDARDIZATION AND SPECIFICATION PROGRAM ----- | 11 |
| | A. INTRODUCTION ----- | 11 |
| | B. STATUTORY REQUIREMENTS ----- | 11 |
| | C. OBJECTIVES ----- | 12 |
| | D. ORGANIZATION/RESPONSIBILITIES ----- | 12 |
| | E. PREPARATION OF SPECIFICATIONS AND STANDARDS - | 16 |
| III. | DESCRIPTION OF THE PROBLEM ----- | 17 |
| | A. INTRODUCTION ----- | 17 |
| | B. BACKGROUND ----- | 17 |
| | C. CURRENT ISSUES ----- | 20 |
| | D. SUMMARY ----- | 28 |
| IV. | ACQUISITION STREAMLINING ----- | 29 |
| | A. INTRODUCTION ----- | 29 |
| | B. BACKGROUND ----- | 30 |
| V. | T-45TS TRAINING SYSTEM ----- | 46 |
| | A. INTRODUCTION ----- | 46 |
| | B. PROGRAM DESCRIPTION ----- | 47 |
| | C. THE ACQUISITION STRATEGY ----- | 48 |
| | D. PROGRAM MILESTONES ----- | 51 |
| | E. BACKGROUND ----- | 51 |
| | F. THE TIGER TEAM ----- | 54 |
| | G. STREAMLINING RESULTS ----- | 65 |

| | | |
|-------|---|-----|
| VI. | ARMY STREAMLINED ACQUISITION PROGRAM (ASAP) ----- | 69 |
| A. | NON-DEVELOPMENTAL ITEMS (NDI) ----- | 69 |
| B. | PREPLANNED PRODUCT IMPROVEMENT ----- | 74 |
| C. | REORIENTATION OF FORMAL MILESTONES ----- | 78 |
| D. | STREAMLINED REQUIREMENTS ----- | 81 |
| E. | UTILIZATION OF TROOP DEMONSTRATIONS ----- | 82 |
| F. | SMOOTH TRANSITION TO PRODUCTION ----- | 83 |
| G. | STAFF DRAFT REQUIREMENTS DOCUMENTS AND/OR RFP ----- | 83 |
| H. | SUMMARY OF THE ASAP INITIATIVES ----- | 85 |
| VII. | IMPLEMENTATION OF DODD 5000.43: | |
| | ACQUISITION STREAMLINING ----- | 87 |
| A. | DESIGNATE AN ADVOCATE ----- | 88 |
| B. | ENSURE REVIEW OF ALL APPLICABLE SYSTEMS AND EQUIPMENT AT EACH PHASE ----- | 88 |
| C. | ENSURE APPROPRIATE TRAINING OF ACQUI- SITION PERSONNEL ----- | 90 |
| D. | DEVELOP A PROGRAM TO RECOGNIZE OUTSTANDING PERFORMANCE IN ACQUISITION STREAMLINING ----- | 92 |
| E. | PREPARE AN ACQUISITION STREAMLINING PLAN ---- | 92 |
| F. | SUMMARY ----- | 95 |
| VIII. | CONCLUSIONS, RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH ----- | 96 |
| A. | OVERVIEW ----- | 96 |
| B. | CONCLUSIONS ----- | 96 |
| C. | RECOMMENDATIONS ----- | 100 |
| D. | AREAS FOR FURTHER RESEARCH ----- | 101 |
| | LIST OF REFERENCES ----- | 103 |
| | INITIAL DISTRIBUTION LIST ----- | 107 |

I. INTRODUCTION

In the past the media has featured innumerable headlines and stories. Congress has conducted hearings and investigations, articles and books have been written and discussed, GAO and other agencies have investigated and reported, and yet the problems perceived with procurement within the Department of Defense have persisted, and have even grown in some instances.

The average American taxpayer not only believed defense spending was wasteful and out of control, but that the military was unable to perform its mission when called upon to do so, as evidenced by the aborted Iranian hostage rescue. The scenario described has been a low point in the recent history of the American military forces.

President Reagan's administration arrived in Washington with a mandate from the American people to restore and strengthen the defense posture of the United States. In order to accomplish the necessary readiness of the armed services, a number of significant steps had to be taken. One of the most important of these steps would be to reform the acquisition process of the Department of Defense. This would have the effect of not only reducing the cost of the weapons and equipment procured, but simultaneously improving their quality and/or performance.

In the past, defense contractors have been subjected to a barrage of requirements and details instructing them not only what to do, and how to do it, but also how to manage while they were doing it. Military specifications and standards were used to surround the acquisition process with a virtual fence of rules and requirements so as to best protect the interests of the Government. This tendency toward over-application of specifications and requirements may have reduced risk, but it also definitely resulted in unnecessary costs.

There are more than 40,000 Department of Defense standards and specifications currently in print, which have the potential to cause problems in terms of over-specified requirements, ambiguous wording, obsolete paragraphs and overlapping requirements which may or may not be compatible with one another. In addition, there are literally millions of contractor generated drawings, which the government has acquired which also may contain the same over-specified requirements. [Ref. 1] Therefore, the magnitude of the problem is so large as to be termed "undefinable" in a preliminary assessment issued by the Deputy Secretary of Defense, William H. Taft IV on November 8, 1984. [Ref. 2]

Acquisition streamlining is the latest DoD thrust to combat over-specified, ambiguous, redundant requirements. It is based on the concept of applying only specifically pertinent contract requirements and allowing early industry

involvement in recommending the most cost-effective solutions. DoD can then reduce the cost and/or time of system acquisition and life cycle cost with no loss in the quality of the system or equipment.

Acquisition streamlining is not a new idea, it has been discussed and debated in the literature involving DoD acquisition for the past decade. Fueled by media sensationalism and possible Gramm-Rudman budget cuts, the Army, Navy, Air Force and Marine Corps have begun to do more than talk streamlining. They are actually doing it.

Acquisition streamlining involves taking action to preclude or eliminate the non-cost-effective requirements in design, development and production. This can be accomplished in four ways:

1. Specify requirements in terms of the results desired (performance specifications) rather than "how-to-design" (design specifications).
2. Preclude premature application of design solutions, specifications, and standards.
3. Tailor the contract requirements to fit the unique circumstances of each acquisition program.
4. Limit the contractual applicability of referenced documents to only those that are essential.

Deputy Secretary of Defense William H. Taft IV has taken the lead by having issued DoD Directive 5000.43 on January 15, 1986. This document directs DoD to undertake a program of Acquisition Streamlining in order to increase the cost-effectiveness of system acquisition requirements. [Ref. 3]

The main thrust of the thesis will be a discussion of the Streamlining Initiative, what it is, its background and composition, where and how it has been utilized, and finally, where, when and how streamlining can be applied so as to achieve the least cost acquisition.

In order to accomplish this task, the thesis will first look briefly at the history of DoD standardization, and the organizations tasked with developing and ensuring materiel standardization is achieved during the design, development and acquisition process.

Then the study will examine how two of the services have approached streamlining. The Army and the Navy have interpreted, and utilized the streamlining concept in different ways.

II. THE DEFENSE STANDARDIZATION AND SPECIFICATION PROGRAM

A. INTRODUCTION

The Defense Standardization and Specification Program (DSSP) was established in 1952. It was designed to improve the operational readiness and cost effectiveness of defense materiel through the development and use of common systems, subsystems, equipment, components, parts, materials, technical data and engineering practices. [Ref. 4]

The DSSP is a "single, integrated defense-wide program managed by the Under Secretary of Defense for Research and Engineering (USDRE)." [Ref. 4]

B. STATUTORY REQUIREMENTS

Public Law 82-436, 1952, which first established the DSSP, was later superseded by Title 10, U.S. Code, Chapter 145, Cataloging and Standardization. It contains the statutory requirement for the Cataloging and Standardization Program. [Ref. 4]

DoD Directive 4120.2, "Defense Standardization and Specification Program" invokes the basic policy regarding DoD standardization. It states it is Department of Defense policy that "there shall be a single integrated Defense Standardization and Specification Program (DSSP) and a

uniform series of specifications, standards, and related documents." [Ref. 6]

C. OBJECTIVES

The objective of the program is to "ensure that optimal materiel standardization is achieved during the design, development and acquisition process. This is accomplished by applying standardization principles, such as item commonality, interchangeability, and interface compatibility, in engineering and acquisition management." [Ref. 4]

In order to accomplish the objectives of the DSSP various actions are taken:

1. The development of standardized products and practices to satisfy military requirements.
2. The preparation of standardization documents for engineering and acquisition use for the standardized products and practices.
3. The prevention of duplicative and overlapping descriptions of materiels and services such as specifications, standards, engineering drawings, etc.
4. Encouraging the use, or reuse of, proven technology and design features for equipment and systems.
5. The establishment of uniform grades and types, classes and sizes of items and performance requirements which help define the characteristics of materiel.
6. The development of methods to periodically screen the items in the inventory to reduce the number of items to the minimum level which is compatible with the needs of DoD. [Ref. 4]

D. ORGANIZATION/RESPONSIBILITIES

DoD Directive 4120.3 goes on further to state that though the policy shall be integrated and uniform, the

procedures by which the DSSP is administered shall be a "decentralized program with management authority and responsibilities . . . delegated to the DoD Components." [Ref. 5]

The overall DoD policy, guidance and administration is the responsibility of the Under Secretary of Defense for Research and Engineering (USDR&E). Advice and guidance on standardization issues are provided to the USDR&E by the Defense Standardization and Specification Board (DMSSB). The board is staffed by Flag rank/Senior Executive Service representatives from each Department, the DLA and the Office of the Secretary of Defense.

The Defense Materiel Specifications and Standards Office (DMSSO) is responsible for:

1. Administering and managing the DSSP, including establishing policies, procedures, program guidance and controls.
2. Assigning to the DoD Components the responsibilities for the implementation of specified portions or segments of the DSSP.
3. Establishing, reporting and surveillance techniques which measure the degree to which the program objectives are achieved.
4. Issuing DoD 4120.3-M Defense Standardization Manual. [Ref. 5]

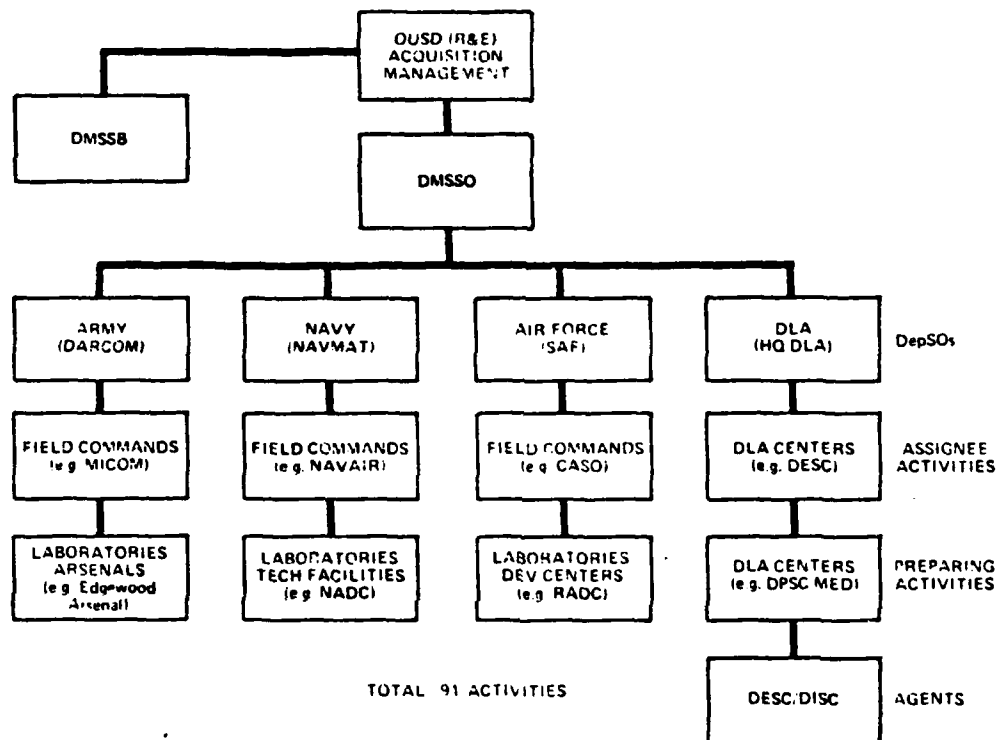
Within each Service and DLA, a Departmental Standardization Office has been established to manage those portions of the DSSP assigned to the respective Department and Agency. [Ref. 5]

The products used by the services are grouped into "families" and are identified as Federal Supply Classes (FSCs). Management and engineering practices, such as reliability, maintainability, safety and configuration management, are identified as Standardization Areas. "For each FSC and Standardization Area, a military organization known as an Assignee Activity (for FSCs) and Lead Service Activity (for Areas) is delegated the responsibility for analyzing, planning for, and ensuring that optimal standardization is accomplished." [Ref. 5]

The actual development of specifications, standards and related documents is performed by the DoD organizations known as the Preparing Activities. It is their responsibility to develop, maintain, and coordinate individual DSSP documents, and to ensure that they meet mission requirements. The Assignee and Lead Service Activities may also function as Preparing Activities. Other activities or organizations such as the user or participating activities may also participate in the planning, management, and preparation of FSC/Standardization analyses, plans, and standardization documents. [Ref. 5]

The actual organization chart, or wiring diagram, is shown in Figure 1. (There have been several changes since the diagram was first drawn. For the Navy, NAVMAT no longer exists, while the Army organization identified as DARCOM is now known as AMC. Also a new Army command, LABCOM, was

STRUCTURE FOR STANDARDIZATION MANAGEMENT



Source: [Ref. 4]

Figure 1. Structure for Standardization Management

created which is composed of the laboratories and major subordinate command R&D centers.)

E. PREPARATION OF SPECIFICATIONS AND STANDARDS

There are Preparing Activities listed under each major service and DLA. These are the organizations tasked with the actual development of specifications, standards and related documents. However, according to An Overview of The Defense Standardization and Specification Program (DSSP) Assignee and Lead Service Activities may also function as Preparing Activities. Additionally, other activities or organizations such as the user or participating activities may also participate in the preparation of standardization documents. [Ref. 4]

Therefore, the preparation of specifications and standards is the responsibility of a number of different organizations within the three major services and DLA. It is decentralized to the extent that each service has one, or more, organizations preparing specifications and standards.

III. DESCRIPTION OF THE PROBLEM

A. INTRODUCTION

General Richard H. Thompson, Commander, Army Materiel Command, speaking at the Second National Conference on Acquisition Streamlining, stated,

Procurement bridges the gap between the determination of our needs or requirements and the actual delivery of a product or service. It provides the vehicle for specifying what we want, when and where we want it, and how much we will pay for it. Being rooted in law, the procurement process is dynamic. While the basic steps are relatively constant, the procedures used to accomplish them change frequently. Most changes are driven by legislative action while some are driven by our own initiatives to improve the process. [Ref. 6]

The Streamlining Initiative is one of those changes which has been proposed, and is in the process of implementation, by the Department of Defense. It is designed to change the procurement procedures for the military services.

The Streamlining Initiative has been developed in response to a public perception that the cost of DoD systems and equipment are prohibitive; that the process has become too overregulated and bureaucratic; that it takes so long to develop and produce a system that when it is fielded the technology is obsolete. [Ref. 7]

B. BACKGROUND

The Streamlining Initiative is fairly new. The DoD Directive 5000.43, "Acquisition Streamlining" was only

signed on January 15, 1986. "Streamlining" as a concept, however, is not a new idea for the Department of Defense. An article published in the January 1973 issue of Defense Management Journal entitled, "Source Selection Process Faces Winds of Chicago" cites the need for improving the acquisition process by clarifying and simplifying the Request For Proposals (RFPs). [Ref. 8]

In the article, the Commander of the Aeronautical Systems Division, Air Force Systems Command, discusses the "stereotyped RFP format, which attempted to incorporate all the Armed Services Procurement Regulation (ASPR) instructions, evolved over the years to the point where it often managed in 250 pages or so to obfuscate issues with the skill of a magician." He views the "prototype programs, emphasizing simplified and streamlined management, procurement and development approaches provides the kind of environment in which imaginative ideas can surface, be applied and tested." [Ref. 8]

He states, "Undoubtedly, the best example of this fresh acquisition approach" is a Lightweight Fighter Prototype Project which resulted from a study initiated by a former Deputy Secretary of Defense, David Packard. [Ref. 8]

In 1973, Mr. Packard also went on record to say, Management systems . . . The principle here should be that the DoD should not have to specify the management systems for the contractor. If the contractor does not have a management system adequate to manage a program, he should not be given the contract. [Ref. 9]

Later the same year, another article appeared in the Defense Management Journal, this one entitled, "Culprit of Contract Appeals is Ambiguous Specifications." In the article, the Deputy Director, Contract Administration Directorate, DCASR, New York, quotes a 1969 report by the Joint Logistics Review Board, concerning procurement and production. The report states,

the Armed Services Board of Contract Appeals (ASBCA) considers approximately 900 cases a year and estimates that 50 percent of these are caused by improper specifications. The number of cases involving specifications being appealed to the ASBCA has been increasing since 1965. [Ref. 10]

The article continues with the statement that,

There is presently a deep concern over rising costs of defense procurement, the contingencies and mounting costs . . . one of the most complex sources of contract litigation involving complex technical issues and unexpected cost is found in the specifications, work statements, drawings and other technical data . . . [Ref. 10]

Lieutenant Colonel Donald M. Keith, Director of the National Maintenance Point, U.S. Army Security Agency Materiel Support Command, and Charles A. McCarthy, stated in 1976, that

the specification for equipment is probably the most important document that emerges in the user-producer relationship. Empirically, it is in this process that the Government most often fails to 'say what it means, and mean what it says.' [Ref. 11]

LTC Keith and Mr. McCarthy discuss other problems in their 1976 Army Logistician article, "Ask For It Clearly." Their description of one of the problems is,

Clutter in a specification is bad. Worse still are statements that lack clarity . . . In a recent proposal

evaluation, an evaluator was overhead to say, 'How in blazes could a contractor propose such a stupid response?' When the specification was checked, the requirement was found to be so poorly worded that it did not convey the user's need, even to the evaluator who knew what was required. In fact, the contractor's response was not stupid but was a reasonable response to a poorly described requirement. [Ref. 11]

The Defense Science Board looked at military specifications and standards in the mid-70's. Their report was delivered to the Pentagon in January 1977. It stated that DoD specifications and standards:

1. Are essential to technical procurement
2. Are . . . as a body . . . adequate
3. Provide lessons learned
4. Serve as primers for the inexperienced
5. Help assure quality products.

However they:

1. Include cost drivers . . . primarily non product . . . those concerning general design requirements, documentation and management
2. Refer to other documents . . . many of which should not be contractual.

Therefore, what is needed is to:

1. Improve the specifications and standards themselves
2. Improve application of specifications and standards.
[Ref. 9]

C. CURRENT ISSUES

Dr. Richard Stimson is the OSD point of contact for streamlining, and the Director of the Industrial Productivity Office in the Office of the Assistant Secretary of

Defense (Acquisition & Logistics). He expressed his disappointment in a June 1985 Government Executive article over the difference between what the Defense Science Board had recommended and what had actually been accomplished in the nine years since the report was issued as evidenced by the current problems. [Ref. 12]

One of the examples his office uncovered in their research, "the requirements package for a single electronic 'black box' added up to 2,000 specifications, made a piled-up stack eight feet high." [Ref. 12]

1. Growth of Specifications

Specifications and standards have grown from 40,300 in 1968 to 32,900 in 1978 to 45,800 in 1982. Externally imposed management procedures have managed to keep pace with them, as they have grown from 30 in 1968 to 600 in 1978 to 900 in 1982. [Ref. 9]

There is even a 22 page specification for a mouse-trap [Ref. 12] as well as a 14 page specification established for fruitcake. Senator Sam Nunn was responsible for reading a 14 page MIL Standard on fruitcake into the Congressional Record. The latest revision raised the tolerances for candied cherries. [Ref. 13]

2. Overspecification

A comparison of DoD and commercial requirements makes an interesting contrast, as can be seen in Figure 2. The total number of documents for the DoD program is 11,000

COMPARISON OF DoD AND COMMERCIAL REQUIREMENTS

| <u>FSD CONTRACTUAL REQUIREMENTS</u> | <u>DoD</u> | <u>COMMERCIAL</u> |
|--|------------|-------------------|
| PROGRAM PLANS | | |
| MANAGEMENT SYSTEMS | 20 | 0 |
| OTHER THAN MANAGEMENT SYSTEMS | 20 | 1 |
| SPECIFICATIONS | 210 | 9 |
| DATA ITEM DESCRIPTIONS | <u>300</u> | <u>0</u> |
| DOCUMENTS - ORIGINAL CALLOUT | 550 | 10 |
| TOTAL DOCUMENTS - INCLUDING TWO TIERS OF REFERENCED DOCUMENTS | 11.000 | 50 |
| PAGES OF SYSTEM PECULIAR SPECS | 16.000 | 400 |
| FSD PAPERWORK CONSEQUENCES | | |
| CONTRACTUAL SPECIFICATION CHANGES | 2.000 | 480 |
| SEPARATE DATA SUBMITTALS | 30.000 | 250 |

Source: [Ref. 9]

Figure 2. Comparison of DoD and Commercial Requirements

documents as compared to 50 documents for the commercial program. [Ref. 9]

The typical military program, specifies 30 how-to-manage plans, 300 military specifications and standards. The latter, in turn, reference 12,000 other specs/standards just in the first two tiers below that top of the paper pyramid, and 400 data items. [Ref. 12]

3. Tiering of Specifications

The tiering of specifications, or pyramid effect, wherein each specification references more specifications, is another large problem area. The problem is compounded by incorporating all the specification and references into the contract as requirements. For example, Figure 3 shows four specifications with 143 second tier specifications and over 4,000 in the third tier. [Ref. 14]

4. Unnecessary Requirements

The first draft of an RFP for the Advanced Medium Short Take-Off and Landing Transport (AMST) contained a number of unnecessary requirements, as can be seen in Figure 4. While the specification for curled animal hair, paper grocers' bags, and packaging and packing of thread might be interesting, they have little to do with aircraft requirements.

5. Aged Specifications

Specifications and requirements are in many ways the "corporate memory" of the Department of Defense and were

Example: The Spec Snowball

| 1ST TIER | 2ND TIER | 3RD TIER |
|----------------------------------|----------|-----------|
| MIL-P-9024 (PKG/HANDLING/TRANSP) | 50 | 1,009 |
| MIL-S-8512 (GENERAL S.E. SPEC) | 75 | 3,111 |
| MIL-STD-490 (SPEC PRACTICES) | 10 | 112 |
| MIL-STD-1561 (PROVISIONING) | <u>8</u> | <u>38</u> |
| | 143 | 4,270 |

Source: [Ref. 14]

Figure 3. The Spec Snowball

Why Tailor Unnecessary Requirements?

| | |
|---------------------|--|
| FED SPEC PPP-C-0020 | STEEL FILING CABINETS |
| FED SPEC UU-B-36 | PAPER GROCERS BAGS |
| FED SPEC PPP-P-50 | PACKAGING AND PACKING OF THREAD |
| FED SPEC C-H-111 | CURLED ANIMAL HAIR |
| FED SPEC UU-P-271 | DRAFT WRAPPING PAPER |
| MIL-STD-758A | PACKAGING PROCEDURES FOR SUBMARINE REPAIR PARTS |

Source: [Ref. 14]

Figure 4. Why Tailor Unnecessary Requirements

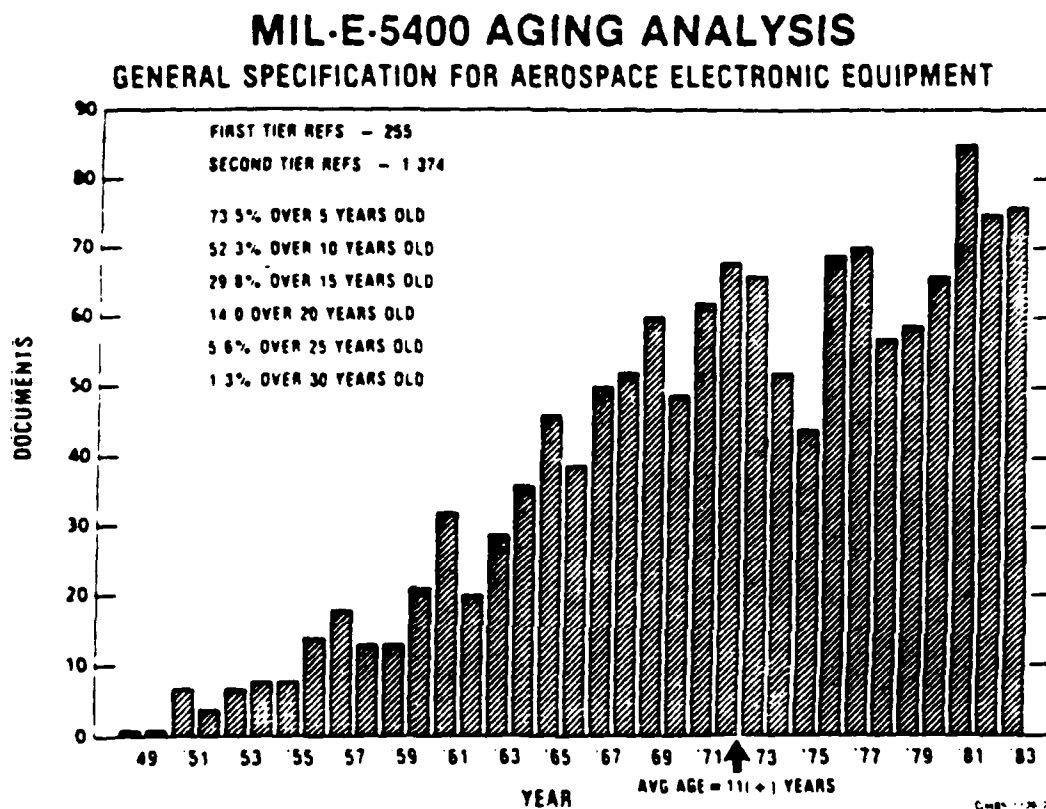
created to solve or preclude problems. However, many of them contain, or reference, dated information or processes.

For example, MIL-E-5400, which is the general specification for aerospace electronic equipment, contains 255 first tier references and 1,374 second tier references [Ref. 15]. The average age of the documents is 11+ years, as can be seen in Figure 5. In an industry such as the electronic industry, where time is measured in generations of equipment rather than years, this places the specifications at least one, or possibly more, generations behind the current state of the art.

What this means to DoD is that the components or equipment being procured is more than likely not available in the marketplace. Therefore, contractors must conduct special production runs to meet the needs of the DoD. This amounts to more cost and higher prices for equipment or components which are by industry's standards, obsolete technology.

Additionally, if a contractor attempts to manufacture equipment according to aged specifications, he may experience difficulty in conformance. If the contractor does not conform to the aged or out-dated specification, he stands the risk of not passing the quality inspections.

For example, Mr. John P. Leslie, Manager, Quality and Reliability Assurance, Texas Instruments, briefed the DoD Streamlining Advocates on March 15, 1985, about a



Source: [Ref. 15]

Figure 5. MIL-E-5400 Aging Analysis

problem his company had experienced with MIL-E-5400. [Ref. 15]

MIL-E-5400 references MIL-A-8625C, which is concerned with anodic coatings for aluminum and aluminum alloys. MIL-A-8625C was issued on January 15, 1968, and last amended on March 14, 1969.

Under MIL-E-5400 3.13 Workmanship, it states, "The anodic coating shall be continuous, smooth, adherent, uniform in appearance." The difficulty is that many of Texas Instruments' aluminum parts are castings which receive anodic coating in accordance with MIL-A-8625C. Production was halted because the coated casings were not "uniform in appearance."

Texas Instruments contacted the Naval Engineering Center, custodian for MIL-A-8625. They said that, "MIL-A-8625 was written around wrought alloys, castings were never considered," but that they were committed to review the specification for possible update. [Ref. 15]

Texas Instruments next contacted the Superintendent of Navy Aero Materials Division, who stated, "The requirement for uniform color of dyed coatings is based on the behavior of wrought alloys and is considered too restrictive for most casting alloys." [Ref. 15]

Next, Texas Instruments contacted ALCOA, the developer and patentee of the anodic coating process, who said,

. . . dye bleedout is not uncommon with castings, the anodic coating has uniform coverage, only the dye (color) is affected by the bleedout and in no way affects the integrity of the coating. [Ref. 15]

After local discussions, three letters, and three months of research it was agreed that discoloration due to dye bleedout on castings is acceptable. The MIL Spec requirements has not been changed. [Ref. 15]

D. SUMMARY

Dr. Stimson, in the June Government Executive article, stated that Defense has more than 40,000 standards and specifications, and

When you snow somebody with all that, they simply won't read it. If they did, they would find (in terms of a specific systems development) a lot of incomplete, contradictory requirements. In fact, very few people examine the details of all those possible applications to see if they're relevant. And, of course, you throw a stack like that at a small business, you simply scare him away from bidding at all. [Ref. 12]

DoD-HBDK-248A states that the more than 40,000 specifications and standards currently utilized by DoD have the potential to cause problems in terms of over-specified requirements, ambiguous wording, obsolete paragraphs and overlapping requirements which may or may not be compatible with one another. [Ref. 1]

As a result, 100% compliance to requirements represents a major challenge to industry, and may not be the most cost effective or efficient means of acquiring material for the Department of Defense.

IV. ACQUISITION STREAMLINING

A. INTRODUCTION

Acquisition streamlining, as defined by the Department of Defense Directive 5000.43, involves taking action to preclude or eliminate non-cost-effective requirements in design, development and production. This can be accomplished in any one of (or combination of) four ways:

1. Specify requirements in terms of the results desired (performance specifications) rather than "how-to-produce" (design specifications).
2. Preclude premature application of design solutions, specifications, and standards.
3. Tailor the contract requirements to fit the unique circumstances of each acquisition program.
4. Limit the contractual applicability of referenced documents to only those that are essential.

The purpose of acquisition streamlining is to promote actions which result in innovative and cost-effective requirements and strategies, which in turn will lead to higher quality weapon systems or products.

Acquisition streamlining is based on the concept that by applying pertinent contract requirements and allowing early industry involvement in recommending the most cost effective solutions, the Department of Defense can reduce the acquisition cost, life cycle cost, and/or time of system acquisition without degrading system effectiveness.
[Ref. 3]

The concept of streamlining may be applied to the entire acquisition process, and as will be seen, has numerous interpretations, which is the intent of DoD Directive

5000.43 as it cites the purpose of acquisition streamlining to be "to promote innovative and cost-effective acquisition requirements and acquisition strategies." [Ref. 3]

B. BACKGROUND

Acquisition streamlining is not a new concept. It has been discussed and debated in the literature for at least a decade. The Defense Science Board reported in 1977 that DoD specifications and standards: are essential to technical procurement; provide lessons learned; serve as primers for the inexperienced; and help assure quality products but that they also include "cost drivers" which are primarily non-product such as general design requirements, documentation and management. It recommended that, in addition to improving the specifications and standards themselves, the actual process by which the specifications and standards are applied needs improvement. [Ref. 3]

Acquisition streamlining is similar to other prior initiatives in that it is designed to reform the acquisition process. What is different, though, is the widespread support and commitment from both the DoD and private industry the streamlining concept appears to have. Based on the numerous studies, programs and initiatives, the support and interest has been slow in building.

President Reagan took office with the professed goals of rebuilding the American economy and the American armed forces. As the economy was in poor shape and the Department

of Defense was perceived by both the American public and Congress as wasteful, the cornerstone of the rearming of the armed forces was to make the acquisition process more efficient. [Ref. 16]

In order to accomplish this, the Deputy Secretary of Defense, Frank C. Carlucci chartered five working groups on March 2, 1981, to review the entire defense acquisition process and make recommendations for improvements [Ref. 17] His goals were to rebuild the basic defense industrial base while simultaneously outfitting the military to meet the perceived growing Soviet threat [Ref. 16]. The results of the study were compiled into a document formally titled, "The Defense Acquisition Improvement Program" which eventually came to be known as the Carlucci Initiatives.

The first 31 Carlucci Initiatives were published on April 30, 1981. Carlucci Initiative number 14, entitled "Reduce Number of DoD Directives and Eliminate Non-Cost-Effective Contract Requirements," focused on acquisition streamlining. [Ref. 17]

A team which was composed of members of the Department of Defense, the National Security Industrial Association and the Aerospace Industries Association was assembled and requested to review 132 acquisition-related DoD directives and regulations, in view of initiative number 14. In addition to recommending that 31 of the 132 acquisition directives be cancelled, they also focused on reducing

non-cost-effective contract requirements and documentation. [Ref. 17] Much of the current emphasis on acquisition streamlining is largely an outgrowth of their actions.

On 12 January 1983, Mr. Paul Thayer became Deputy Secretary of Defense, inheriting the Acquisition Improvement Program and the Carlucci Initiatives. He announced his six "Consolidated Acquisition Improvement Program Initiatives," a composite of twelve of the original 32 Carlucci Initiatives on May 5, 1983. [Ref. 17]

The Second Year-End Report was issued on June 6, 1983, by Mr. Thayer under the guise of a memorandum entitled, "Guidance on the Acquisition Improvement Program (AIP)." It was a summary of the progress made during the first two years of the program and explained further why the 32 initiatives had been reduced to 6. The report characterized 13 of the initiatives as having been fully implemented, nine being in process, and the remaining ten requiring further action. [Ref. 17]

Based on the guidance supplied in the Second Year-End Report, a number of initiatives which were characterized as being "completed" or "on track" were not selected to be emphasized by Mr. Thayer, and therefore were not specifically enumerated in his six consolidated initiatives. Carlucci Initiative number 14, which dealt with the reduction in the number of DoD directives, was not included in

the six consolidated initiatives, which characterized it as being "on track" or "complete."

On January 11, 1984, Mr. Thayer issued a memorandum to the secretaries of the military departments on the subject of improving contract requirements. In this memorandum he cites the recommendations made under the Acquisition Improvement Program Initiative #14 by the review team and the Defense Science Board. The recommendations called for

precluding untimely, untailored and accidentally-referenced application of specifications and standards and for specifying results required rather than detailed 'how to' procedures in contracts and requests for proposals." [Ref. 18]

Mr. Thayer also requested each service designate two or more new major systems acquisitions as pilot programs, and two or more programs currently in demonstration/validation or full-scale development phases for a post-award review to eliminate non-cost-effective contract requirements. Twelve programs were selected, four from each of the Army, Navy and Air Force (see Figure 6).

William H. Taft IV replaced Mr. Thayer in 1984 as the Deputy Secretary of Defense. Shortly after taking office, he released the third annual report on the Acquisition Improvement Initiatives. In the report he voiced his concern that without the proper priority attention the momentum behind the initiative would be lost.

On November 4, 1984, Mr. Taft issues a memorandum expressing his concerns about non-cost-effective

INITIAL PROGRAMS SELECTED MARCH 1984

| <u>ARMY</u> | <u>NAVY</u> | <u>AIR FORCE</u> |
|-------------|----------------|---------------------|
| LHX | VTXTS (T-45TS) | ATF |
| AATWS | JVX | INEWS |
| PERSHING II | CV IZ ASW HELD | AFWIS MODERNIZATION |
| MICNS | LHD-1 | ERAM |

Source: [Ref. 9]

Figure 6. Initial Programs Selected

requirements (particularly for fielded weapon systems) which had resulted in high costs to the Department of Defense. In the memorandum he charged the services to "assess the extent of the problem and its causes, identify solutions already in place, and develop additional proposals, including areas where increased emphasis may be required." [Ref. 2]

Mr. Taft also stated that "ultimately" over-specified and non-cost-effective requirements should be challenged as an integral part of the acquisition process [Ref. 2].

In a memorandum dated December 4, 1984, Mr. Taft identified as the point of contact for the Office of Secretary of Defense, Mr. Peter Yurcisin, the Director of Standardization and Acquisition Support. Mr. Taft also attached a preliminary assessment which had been developed in response to the November memorandum, and directed the military services and the Defense Logistics Agency to develop management plans to implement the proposals cited in the preliminary assessment. [Ref. 19]

The preliminary assessment described the extent of the problem as "undefinable" because there are more than 40,000 military standards and specifications currently utilized by the Department of Defense which have the potential to cause problems in terms of over-specified requirements, ambiguous wording, obsolete paragraphs and overlapping requirements which may or may not be compatible with one another. Additionally, there are literally millions of contractor

generated drawings, which the government has acquired which also may contain the same over-specified requirements.

These specifications and requirements are in many ways the "corporate memory" of the Department of Defense and were created to solve or preclude problems. However, many of them contain, or reference, dated information or processes. This is part of the problem which was identified in Mr. Taft's memorandum. Other causes of the problem identified were:

1. Overly conservative design approach to design engineering.
2. The failure to challenge requirements during design and development.
3. The purchase of equipment by using drawings which are obsolete and outdated.
4. The lack of adequate resources for those groups tasked with material reviews.
5. Over-specification due to a lack of adequate technical data. [Ref. 19]

In the same preliminary assessment, Mr. Taft identified several areas which he termed, "areas of increased emphasis" and "additional proposals." These were areas in which he believed that action could be taken. Some of the areas he cited were: an increased emphasis in awareness for the program managers in technical and cost reasonableness, increased support for standardization programs to review and challenge requirements in specifications and standards, conducting of value engineering throughout the life cycle of a weapon system program and finally, the integration of

efforts among the services and a point of contact within each service for this effort. Also, the memorandum stated that the effort should be in consonance with the ongoing long range Acquisition Initiative number 14. [Ref. 19]

The following day another memorandum was issued by Mr. Taft. The subject of the memorandum of December 5, 1984, was "elimination" rather than "reduction" of non-cost-effective contract requirements, and it accelerated and re-emphasized the program by requesting that each service designate a flag officer (or equivalent Senior Executive Service), not as a point of contact, but rather as an "advocate" by December 15, 1984. [Ref. 20]

Dr. Richard A. Stimson was designated as the focal point for the Office of the Secretary of Defense (OSD), and he was assigned to work with each military department "advocate" in order to finalize the DoD guidance on the "streamlining initiative." [Ref. 20]

It is significant that this is the first reference in the literature to this effort as the "streamlining initiative." Prior to this point it was known as Acquisition Improvement Initiative number 14, or the effort to reduce non-cost-effective contract requirements. With the increased emphasis placed on the initiative by designating service advocates and requiring periodic status reports on implementation progress, the streamlining initiative gained support

and began to accelerate, both within the services and within private industry.

Mr. Taft also stated in the December 5, 1984 memorandum that he fully supported the initiative and would like to see it "institutionalized in major systems acquisitions." [Ref. 20]

There was a shift in emphasis from the memorandum of December 4, 1984, to the memorandum of December 5, 1984--a movement from focusing on short-term "reduction" in non-cost-effective contract requirements to a long-term "elimination" approach.

On December 6, 1984, Mr. Taft made the announcement that streamlining would be one of the top initiatives during this administration. The emphasis within the Office of the Secretary of Defense would be placed on working with the service advocates in expanding the number of programs targeted for streamlining, finalizing the policy and guidance for the Department of Defense, developing a means of measuring effective streamlining implementation and coordinating both a training program and a program designed to incentivize DoD personnel. [Ref. 21]

The streamlining initiative was given new impetus with the announcement of the three military service advocates in January 1985. They were:

Army: Mr. Roy D. Greene

Navy: Mr. Gerard C. Hoffmann

Air Force: Colonel James J. Lindenfelter

The advocates met together with Dr. Richard Stimson on February 25, 1985, and submitted their first report to Mr. Taft on March 5, 1985 [Ref. 21]. Instead of the original 12 programs targeted for streamlining, the number had been expanded to 33 (the programs are listed in Figure 7).

Throughout 1985, the subject of streamlining was well publicized as it was discussed both in the trade literature, and at numerous conferences. It is interesting that individuals from private industry such as Mr. Brent Hardesty, the corporate director, Technical Management Systems, McDonnell Douglas Corporation, were very outspoken on the subject of streamlining.

Mr. Hardesty also chaired the Council of Defense and Space Industry Associations (CODSIA) Task Group 23-83, a group outspoken in defense of the streamlining initiative. He has been directly concerned with the streamlining initiative since 1983, and defines streamlining as "taking actions which result in reduction or more effective use of the cost or time to develop and produce quality products." [Ref. 9]

He states that in order for streamlining to take place, there must first be a "change in attitudes" so that we can "reduce to a minimum" and "make simpler or more efficient" the acquisition process. [Ref. 21]

PROGRAMS TARGETED FOR STREAMLINING

ARMY

EXPERIMENTAL LIGHT HELICOPTER
ADVANCED ANTI-TANK WEAPON SYSTEM
FAMILY OF MEDIUM TACTICAL VEHICLES
JOINT TACTICAL MISSILE SYSTEM
LIGHT-WEIGHT AIR DEFENSE SYSTEM
ARMORED GUN SYSTEM

NAVY

UNDERGRADUATE JET FLIGHT TRAINING SYSTEM (T-45)
JOINT SERVICES ADVANCED VERTICAL LIFT AIRCRAFT PROGRAM (V-22)
REPLACEMENT INNER ZONE AIR ASW VEHICLE (CVIZ HELO)
AMPHIBIOUS ASSAULT SHIP (MULTIPURPOSE)
AE36 (AMMUNITION SHIP)
PATROL COMBATANT MULTI-MISSION SHIP
ADVANCED TACTICAL AIRCRAFT
WORLDWIDE INFO SYSTEM (WIS) MODERNIZATION
AFLOAT CORRELATION PROGRAM
EHF SATCOM TERMINALS
RELOCATABLE OVER THE HORIZON RADAR
SHIP LAUNCHED ELECTRONIC DECOY
RP3D RESEARCH AIRCRAFT
VH-60 PRESIDENTIAL HELICOPTER

AIR FORCE

ADVANCED TACTICAL FIGHTER
INTEGRATED ELECTRONIC WARFARE SYSTEM
WORLDWIDE INFO SYSTEM (WIS) MODERNIZATION
ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE PRODUCTION PROGRAM
ADVANCED TACTICAL FIGHTER ENGINE
PEACEKEEPER ICBM PROGRAM
ACCELERATED SMALL ICBM PROGRAM
MILSTAR
LOCAL ON-LINE NETWORKING SYSTEM
JOINT SURVEILLANCE TARGET ATTACK RADAR SYSTEM
ANTI-RADIATION MISSILE DECOY
TITAN T34D7 SPACE BOOSTER
AIR FORCE MINI-COMPUTER USER SYSTEM

Source: [Ref. 22]

Figure 7. Programs Targeted For Streamlining

Mr. Taft issued a clarifying memorandum on "Acquisition Streamlining" on June 3, 1985, in which he states that one of the goals of acquisition streamlining is to ensure that "contract requirements result from intent and not accident." [Ref. 23] He cites the failure to place a limit on the contractual applicability of documents referenced in specifications and standards as a "leading" contributor to the accidental incorporation of unnecessary or counterproductive contract requirements.

Mr. Taft goes on further to say that it is DoD policy to avoid the "premature" application of military specifications and standards and to limit indirect referencing of contract requirements. He also details procedures to be followed in order to implement this policy:

- In the beginning of a program specify requirements in terms of performance.
- Prior to full-scale development, specifications and standards are to be cited for guidance only.
- For full-scale development contracts, the contractual applicability of specifications and standards will be limited to those specifically cited in the contract. The second-tier and below documents will be for guidance only.
- Streamlining should continue throughout the production phase, ensuring that only essential requirements are carried forward.
- If using non-developmental items, all specifications and standards which define the production baseline for those items are contractually applicable. [Ref. 23]

Mr. Taft also states, in the memorandum, that contractors are required to provide recommendations for

applications and tailoring of specifications, standards and requirements during one phase for application to the next. He designates the program manager as the individual with the authority to make the final decision as to which contract requirements should apply, and cites DoD Directive 4245.7, "Transition from Development to Production," as a basis for "resolving risk and ensuring development of a fully-integrated, producible and supportable system." This policy was given an implementation date of September 30, 1985. [Ref. 23]

The month of June 1985 was a busy one for those involved with the initiative. In addition to the Taft memo there were several articles in Government Executive, and numerous talks given on the subject. One of the common threads which appeared in all the article and speeches given were the topics of quality and cost reduction.

An article in the June issue of Government Executive, "Defense to 'Tailor' Specs and Standards To Get Systems Quality Up, Costs Down," cites the objective of streamlining as being "twin goals" of improving weapon system quality and reducing acquisition costs [Ref. 12]. Another article, in the same issue, "Building Quality Into Our Defense," states that quality is absolutely essential to not only the nation's defense, but to American industry [Ref. 24].

One of the presentations at the Second National Conference and Workshop in June, sponsored by The Institute of

Environmental Sciences, was delivered by VADM Busey (Commander, Naval Air Systems Command or COMNAVAIRSYSCOM) [Ref. 25]. As three of the initial four Navy programs targeted for streamlining were aviation-oriented, NAVAIRSYSCOM assumed a leadership role in streamlining for the Navy and at the conference VADM Busey discussed some of the actions being taken. Also, he described the guidance he had issued to his four program managers:

1. Educate technical personnel on the tailoring process to ensure that specification requirements are optimized in consonance with operational needs and include only essential procedures;
2. Determine the appropriate level of specification application and carefully limit references to avoid unnecessary chaining.
3. Increase contractor involvement in the tailoring process by encouraging contractors to propose specification waivers and deviations as well as allowing maximum use of contractor procedures and data products. [Ref. 25]

VADM Busey also addressed the establishment of an executive level specification aggressor team which he tasked with ensuring that the engineers are tailoring the specifications under their cognizance adequately and properly.

He went on further to describe some of the difficulties which must be overcome in order to make streamlining work:

1. Time is a scarce resource for government engineers, especially during the early phases of the program, which is when tailoring is most effective.
2. There is a tendency to be conservative as specifications were written largely as a result of lessons learned.

3. Contractors are reluctant to propose changes for fear of being found non-responsive.
4. Government policies on competition make it difficult to involve contractors in the tailoring process. Contractors are also cautious about divulging information to their competitors. [Ref. 25]

VADM Busey also pointed out to the conference attendees that the streamlining initiative was not only concerned with equipment and systems in terms of affordability but also in terms of reliability and quality. He stated that since specifications are primarily intended to ensure quality and uniformity, the judicious use of warranties and guarantees will provide the same benefits while permitting greatly increased design flexibility. [Ref. 25]

Throughout the remainder of 1985 the momentum behind streamlining continued. The Council of Defense and Space Industry Associations (CODSIA) wrote Mr. Taft on October 15, 1985, stating that, "of the several hundred companies which received the draft, not one objected to the Initiative, its concepts, nor its policies." [Ref. 26] They did suggest that without compatible regulations implementation would be difficult.

The DoD Directive 5000.43, "Acquisition Streamlining" was issued on January 15, 1986, while the Second National Conference on Acquisition Streamlining was being held. In the memorandum dated the same date, Mr. Taft noted that "cultural change" will be necessary in order to implement the policies contained in the new directive, and that

streamlining is designed to integrate affordability more fully into the acquisition process. [Ref. 27]

Mr. Taft reiterated his commitment to quality while addressing the streamlining conference.

The single most important initiative we will pursue in the future will be to extend our concentration on quality. The DoD/Industry Quality Excellence Program, which includes Acquisition Streamlining . . . expresses our commitment to continuous quality improvement. [Ref. 28]

Streamlining, as it appears in DoDD 5000.43, has been employed successfully by the U.S. Navy with the T-45 Training System. The U.S. Army has adopted a slightly larger view of streamlining and is involved in streamlining its entire acquisition process.

Both applications of the streamlining concept, the Army's and the Navy's, will be explored further in this discussion.

V. T-45TS TRAINING SYSTEM

A. INTRODUCTION

The objective of acquisition streamlining is to reduce the cost and the time it takes to acquire a weapon system while still maintaining or improving the quality of the product. The primary actions are to eliminate from solicitations and contracts such counterproductive requirements as:

- how to manage requirements (e.g., externally imposed management systems)
- premature requirements (e.g., design solutions before development begins)
- untailored requirements (e.g., over-specification)
- accidentally referenced requirements (e.g., unlimited pyramidal referencing).

One of the initial programs targeted for streamlining within the U.S. Navy is the T-45 Training System. In order to reach the affordability goal imposed upon the program, the T-45TS program manager reduced development costs from \$810 million, in 1981, to \$438 million, in 1985. This was accomplished by thoroughly scrubbing each requirement, and attacking the cost driver specifications and standards.

What follows is a brief description of the T-45TS program, what it consists of, its background and problems and how they were overcome.

B. PROGRAM DESCRIPTION

The T-45TS is a comprehensive, integrated jet flight training system for intermediate flight training of Navy and Marine pilots. It is a derivative of a British land-based Hawk system which is currently being flown by the Royal Air Force as well as other countries. The T-45TS has been restructured for use by the American Navy to include aircraft carrier capability.

The T-45 Training system will be used to train approximately 600 undergraduate, carrier-based jet aviators for the U.S. Navy per year. The initial operational capability (IOC) is scheduled for 1990. The 1990 IOC is crucial to maintain required training as the inventories of the T-2 and TA-4 aircraft begin to diminish. The T-45TS is projected to be utilized for required jet pilot training through the year 2015. [Ref. 29]

The T-45TS is a total system, consisting of five major elements, not just an aircraft. It includes 300 fixed-wing aircraft, an associated ground-training subsystem (GTS) and the logistics support capability for both. The ground-training subsystem consists of a package of 32 instrument and operational flight simulators, and 49 computer-based training integration systems which will be used to track and schedule the progress of the student pilots and manage the training program assets. [Ref. 29]

In order to make the T-45A capable of landing and taking off from aircraft carriers, a number of changes had to be made to the British Hawk design (Figure 8).

Moving aft from the aircraft nose: A steerable nose wheel with a catapult launch bar will be installed; strengthened nose and main landing gear will be designed to withstand the higher sink rates experienced in carrier operations; at the rear an arresting hook will be added to allow the aircraft to be recovered on carrier decks; between the nose wheel and hook, the fuselage structure will be strengthened to accommodate stresses in catapulting and arresting the aircraft. These changes, collectively, provide carrier suitability. [Ref. 29]

C. THE ACQUISITION STRATEGY

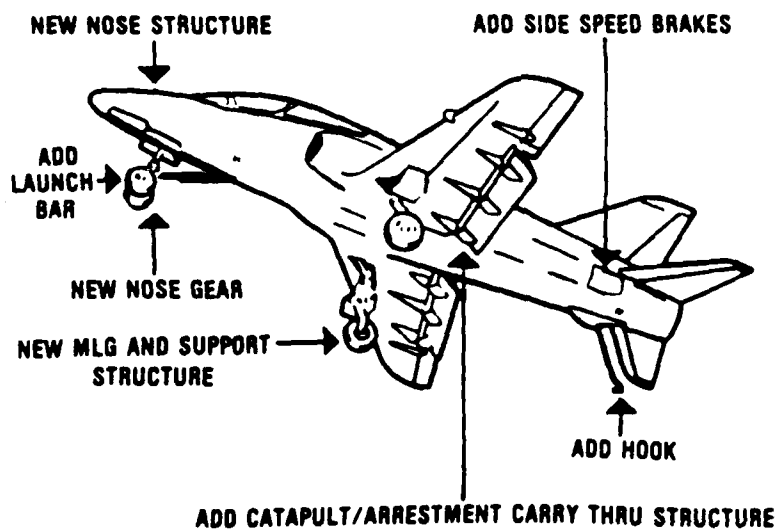
The acquisition strategy for the T-45TS is based on the fact that the Navy is not just purchasing a derivative development aircraft, it is purchasing a fully integrated system for both intermediate and advanced training of Navy and Marine Corps pilots. The T-45TS is scheduled to replace existing T-2 and TA-4 aircraft, simulators, and associated equipment.

The derivative development approach reduces the amount of new technology required. It also provides the maximum benefit from "lessons learned" from British Aerospace in their production experience with the HAWK aircraft, from previous simulator experience, from proven computer-aided instructional devices and from the British Royal Air Force's experience in logistical support of the HAWK.

In addition, the acquisition strategy calls for the contract type to be a firm, fixed price development contract

REPRODUCED AT GOVERNMENT EXPENSE

T45A Design Differences



Source: [Ref. 29]

Figure 8. T-45A Design Differences

with firm fixed price options for low rate initial production of aircraft and associated simulators.

There are four major contractors involved with the program. The prime contractor, McDonnell Douglas, has established teaming arrangements with British Aerospace, Rolls Royce and Sperry Electronic Systems.

McDonnell Douglas is responsible for system integration, in addition to being a joint developer with British Aerospace of the T-45A fixed wing aircraft. Rolls Royce is to provide the MK861 Adour engine; Sperry is the subcontractor for the instrument and operational flight simulators. McDonnell Douglas Astronautics is responsible for the development of the computer-assisted instruction (CAI) and the training integration system (TIS). [Ref. 29]

The T-45TS system will be supported by contractor maintenance. This is in line with the current policy of the Naval Air Training Command, which supports contractor maintenance for non-deployable aircraft as opposed to organic maintenance as a means of lowering life-cycle costs. The initial contract also includes all resources which the contractor will need to initially support the aircraft, such as all repair parts, support equipment publications and manuals. In addition the contractor has been tasked to provide the Navy with the necessary data in order to complete the support contract in the outyears. This will provide the

Navy with sufficient technical information so as to permit contracting flexibility. [Ref. 29]

D. PROGRAM MILESTONES

Technical studies which were conducted in 1978, and alternative systems exploration which were conducted in 1980, indicated that a single airplane could be used for both the intermediate and advance training, and that procuring an integrated system was more economical than procuring just an aircraft [Ref. 30].

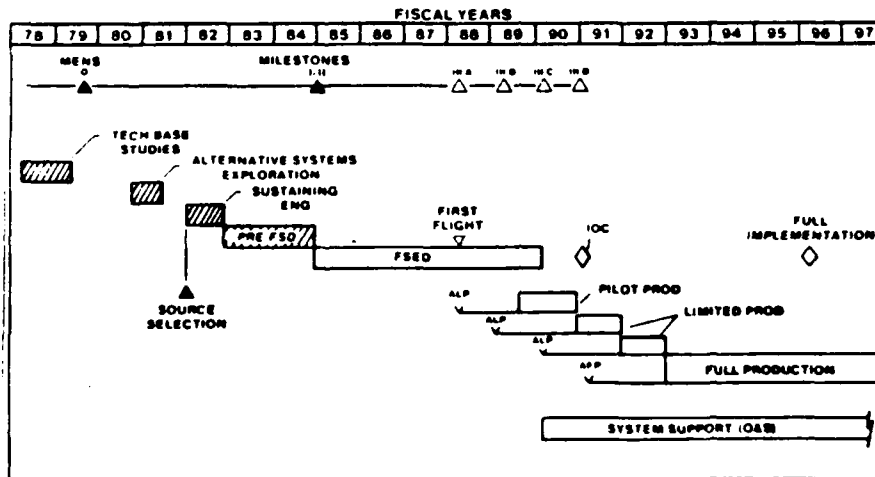
In November 1981, the source selection process was concluded with the selection of McDonnell Douglas Aircraft Company. However, full scale engineering development was not begun until October 2, 1984 (see Figure 9).

The first flight of the T-45 is scheduled for December 1987, followed by pilot production in 1989. Full production will commence in 1991 and will continue through the 1990's. The strategy calls for a total of 300 aircraft to be produced. [Ref. 30]

E. BACKGROUND

In 1981, the program was first estimated to cost \$810 million. However, the initial requirements were reviewed and redefined so as to contract only for those essential hardware items. There was recognition within the T-45TS program office that a new trainer was not top priority within the Navy budget process. [Ref. 29] Therefore, a

T-45TS PROGRAM MILESTONES



Source: [Ref. 30]

Figure 9. T-45TS Program Milestones

decision was made to make the acquisition process as economical as possible. This would, it was felt, improve its chances for continued funding.

In order to accomplish this, during the demonstration/validation phase a number of items were deleted, such as an aerial demonstration trainer, head-up and multimedia displays and an airborne computer. This reduced the estimated cost of development from \$810 million to \$727 million. [Ref. 29]

Other actions which were taken to reduce the costs were a switch from organic (in-house) logistic support to contractor maintenance, and a limitation on the level of military specifications which would be applicable. This latter action is one of the most significant areas of streamlining. By restricting the referencing of specifications to the second tier, with the exception of those involving operational safety, a potentially large number of specifications were eliminated, thereby reducing costs and unnecessary detail.

The T-45TS program was designated by the Under Secretary of the Navy on April 6, 1984, to serve as an initial participant in the drive to reduce contract requirements under the Acquisition Improvement Program Initiative number 14 [Ref. 9]. On the 10th of April 1984, the Chief of Naval Material requested COMNAVAIR to take the lead in implementing the initiatives, as three of the four Navy programs

designated were aviation related. [Ref. 30] A DoD workshop was held in the latter part of May 1984 to discuss these concepts.

Also in May of 1984, the T-45TS program was reviewed by the Navy Systems Acquisition Review Council and the Secretary of the Navy and a determination was made that, while the strategy was sound, the program was not affordable at \$727 million. The T-45TS program office received guidance to reduce the development costs to \$450 million beginning in fiscal year 1985. [Ref. 29] It was at this point in time that the contract type was changed from cost plus to firm fixed price.

Basically, the program manager was faced with three goals: to achieve the necessary cost savings/cost avoidance wherever possible, restructure the program, and maintain the technical quality and operational performance of the T-45TS.

F. THE TIGER TEAM

The response by the T-45TS program office was to organize a joint Naval Air Systems/Douglas Aircraft Company Tiger Team who was given the mission of making the program affordable, i.e., development costs equal to \$450 million. [Ref. 29]

It was recognized by the program office that coordination and planning were going to be two critical elements of the restructuring effort, as the program developed by the Tiger Team would have to be approved by both the Navy and

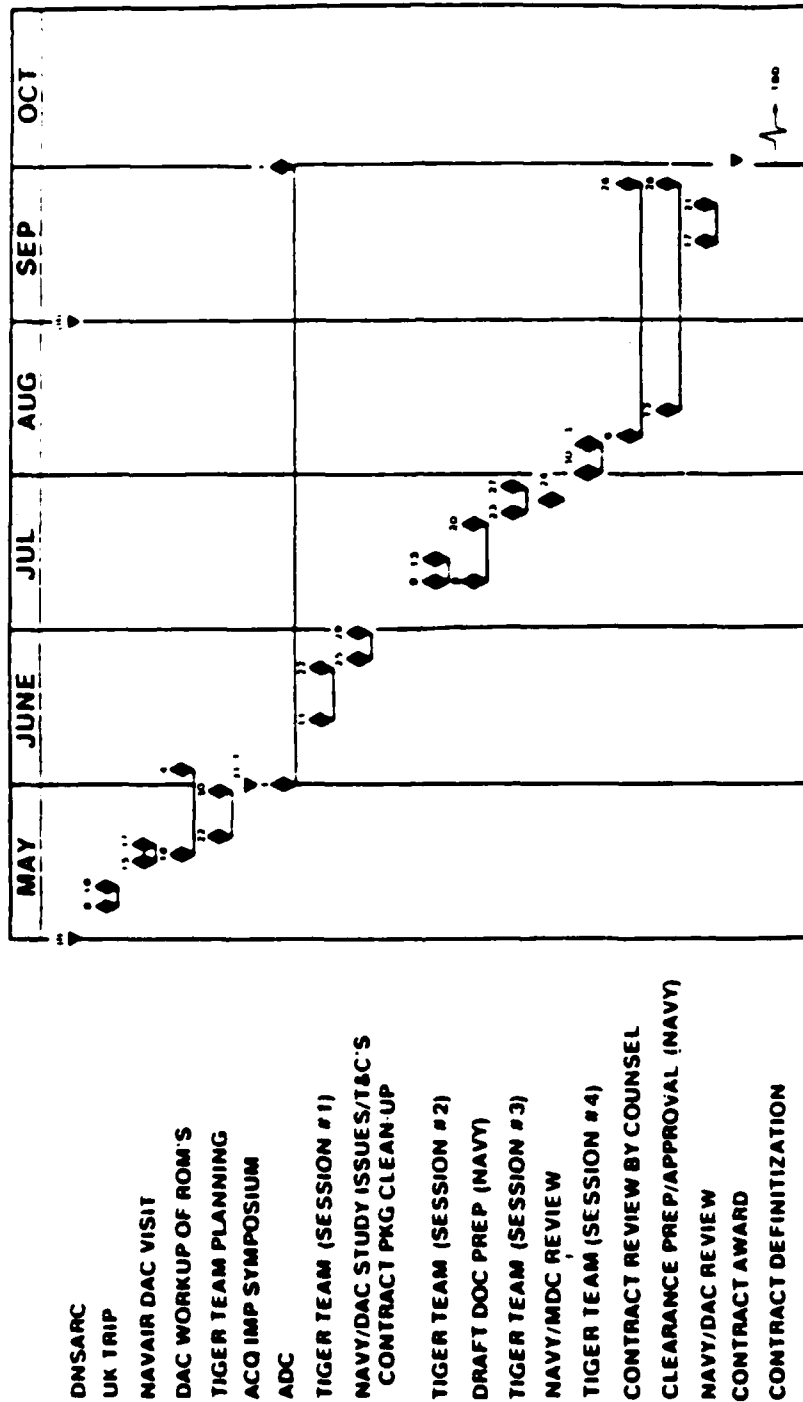
the top management of Douglas Aircraft Company. A rigorous schedule was established which was used to track the progress and to establish a target date for the signing of the letter contract by October 1, 1984 (see Figure 10).

The program manager, as the one individual responsible for the overall operation, had a two-fold responsibility for the Tiger Team; he ensured that while the Tiger Team received constructive inputs from those outside the team, they were also shielded from disruptive inputs.

The actual formation of the Tiger Team was crucial not only because of the composition of the team, but because of the atmosphere and attitudes created. It was as essential to assign the right personnel to the right positions as it was to ensure everyone was committed to the team goals in order to accomplish the rather ambitious schedule established for the restructuring effort. It was important that the team became, as much as possible, an integrated whole, willing to work for team goals rather than individual agendas.

The Tiger Team was the responsibility of the program manager, but the day-to-day management of the team was left to the Navy deputy program manager and the Douglas program manager. The actual responsibilities of the Tiger Team are shown in Figure 11. In each of the three critical functional areas shown at the bottom of Figure 11, Navy

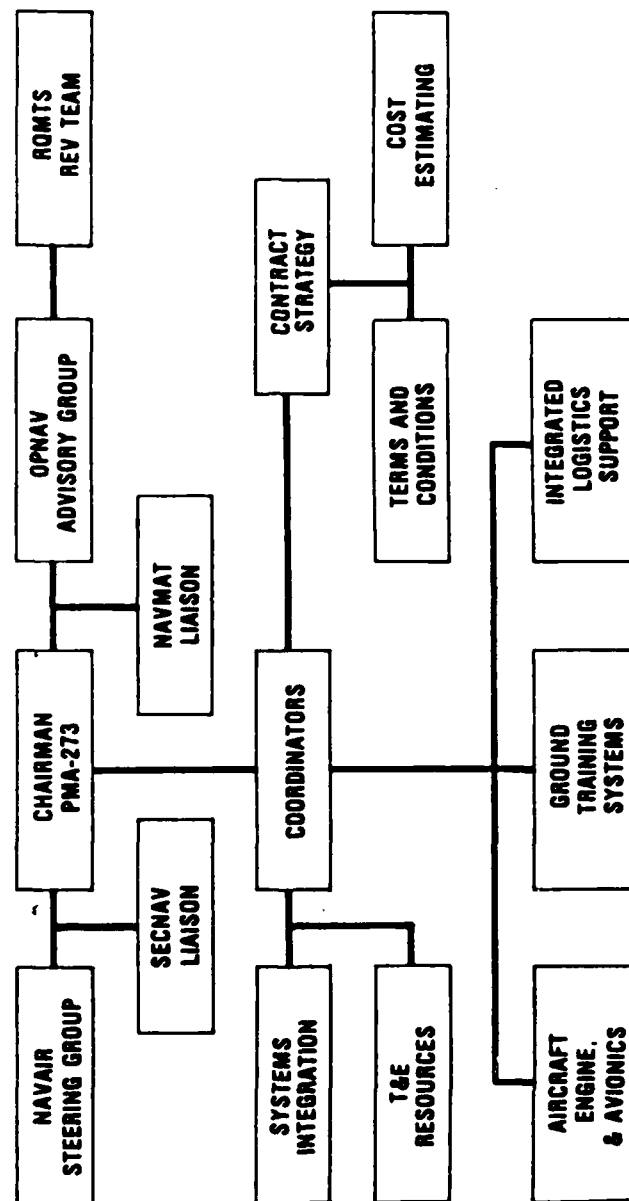
RESTRUCTURE SCHEDULE



Source: [Ref. 30]

Figure 10. Restructure Schedule

Tiger Team Responsibilities



Source: [Ref. 29]

Figure 11. Tiger Team Responsibilities

engineers and logisticians worked closely with their counterparts from private industry.

The cost of the program was tracked by a contract strategy team who also ensured that the contract language was modified appropriately. Other teams monitored the systems integration to ensure that nothing was being lost and that the end product would continue to be an integrated and balanced program.

The full team met four times, initially for two weeks than three more times for a week each time. In between times, the individual committees met, worked, and kept in touch with one another through extensive use of electronic communications. [Ref. 29]

The Tiger Team was charged to:

streamline specifications and standards by determining minimum essential technical requirements without sacrificing material needs and particularly to isolate essential performance requirements from detailed design specifications. [Ref. 31]

Prior to the formation of the Tiger Team, in April 1984, the Request For Quotation (RFQ) for full-scale engineering development was released. Though the program office was intending to award the contract as a firm-fixed price contract, the Request For Quotation was released on a cost-plus-fixed-fee basis. This was done intentionally as the Request For Quotation was to be used as the baseline, or straw man, for the restructured contract.

The straw man was constructed by a joint Navy/contractor effort and it consisted of four parts: specifications, statement of work, contract data requirements, and contract terms and conditions.

As nearly 80% of the overall system cost was in the T-45A aircraft, the team focused on the design or detailed specifications. The T-45A aircraft detail specification "defines all the operational characteristics of the aircraft and its subsystems, as well as proven practices that are to be applied in the design, manufacture, and support of the aircraft." [Ref. 31] The specifications and standards committee of the Tiger Team utilized a draft copy of DoD Handbook 248B, "Optimizing Contractual Requirements for Cost Effective Application in Defense Contracts," in developing their strategies to streamline the program.

First they focused on limiting the referencing of specifications to the second tier, with the exception of operational safety. In the government, the aircraft specification document is known as the detailed or design specification. The tier below that document comprises documents referenced therein, mostly military specifications and standards; the second tier of specifications, therefore, comprises documents referenced in the first tier, etc. As the tiering of specifications for the T-45TS was terminated at the second tier, this meant that all the essential

requirements were cited in the contract, while the non-essential were either dropped or cited for guidance only.

Closely associated with the streamlining action of the specifications and standards was an effort to reduce the number of contract data requirements. This government call for data is known as the Contract Data Requirements List (CDRL). The two data managers from both the government and the contractor were tasked with reducing the number of items on that list, in view of the on-going streamlining effort. They utilized several strategies in order to accomplish the task: [Ref. 31]

1. Utilize existing data. There was a great deal of British documentation available, which had only to be "Americanized" for those areas which the British Hawk and the American T-45A would have in common. This was not quite as simple as it sounds, as it meant reconciling different engineering philosophies, drawings and practices.
2. Combine common data requirements specified at the subsystem level into a single "system" data deliverable in one document.
3. Eliminate unnecessary or non-essential requirements, the so-called "gold-plating" of contracts. This would limit the data requirements to only those essential program requirements.
4. Permit the use of contractor format for the preparation of data. The format of the data was unimportant, as long as the content was complete.

By constructing the straw man both the Navy and the contractor personnel achieved a good understanding of what the baseline consisted of, the associated costs for major elements of the work breakdown structure (WBS).

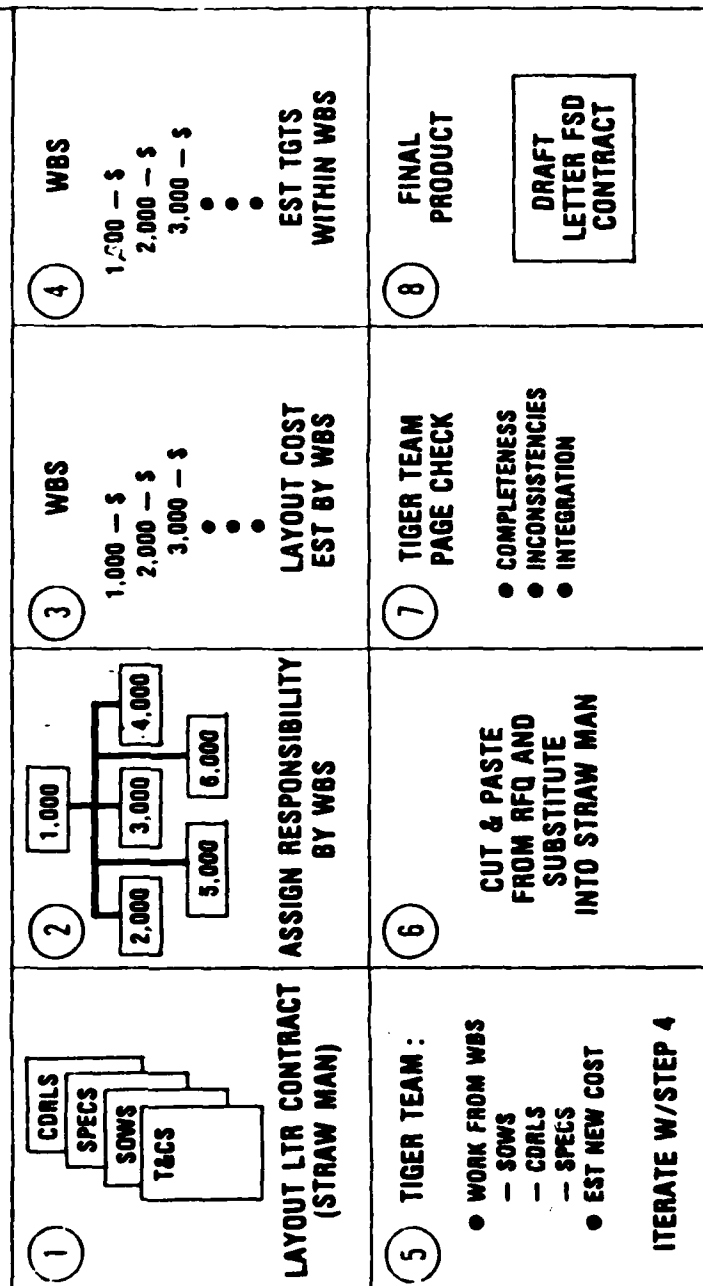
One of the most widely used and accepted methods for achieving an acceptable or suitable baseline is the work breakdown structure, which was the method chosen by the T-45TS program office.

The work breakdown structure provides a technique to systematically divide the T-45TS program into components. These components are exhibited in such a manner as to clearly display their relationship to one another and to the program as a whole. Each WBS element was then analyzed to see if reductions could be made which would achieve the desired savings while still retaining the system integrity. The actual restructuring process followed a series of eight steps, which are shown in Figure 12.

The Tiger Team responsibilities were assigned based on the work breakdown structure, the cost estimate was divided according to the work breakdown structure, and therefore, the cost reduction targets were also established using the work breakdown structure. The work breakdown structure was uniquely suited to this type of operation as it clearly defines the item or product to be developed and relates the element of work to be accomplished to each other and the end product. [Ref. 29]

One of the unique actions taken by the Tiger Team was the sharing of cost estimates, in order to reach agreement on the cost of each major element in the WBS. In doing this, both the Navy and the contractor were forced to drop

T-45TS Program Restructure Process



Source: [Ref. 29]

Figure 12. T-45TS Program Restructure Process

the normal adversarial roles played and become very frank and honest with one another as to how the costs were constructed, and what was involved in each cost area. This is generally not done, as it was a form of technical negotiations. [Ref. 30]

What the Tiger Team did, in addition to assigning the cost estimates by work breakdown structure, was to establish targets for the reduction of costs by the same method. This was an iterative means of achieving the necessary cost savings. The Tiger Team, working from the specifications, statement of work and contract data requirements list, established new costs for each element, and then repeated the process until the goals were reached. It took eleven different sessions to restructure the WBS to reflect a restructured program and establish a new cost estimate for the T-45TS program.

The recommendations for restructuring were recorded and tracked using a "T-45TS Restructure Chit," which used the WBS element number as a point of reference. [Ref. 32] The chit also addressed the specific impacts associated with each action, such as risk. Risk was also divided into three categories: technical, schedule and cost (see Figure 13).

The final product, consisting of the basic contract and nineteen different attachments, was refined eventually into a letter contract which was signed by the Navy and the

RISK ASSESSMENT

| T4C10 RESTRUCTURE CHIT | | | |
|--|--|-----------------------------|--------------------|
| NBS ELEMENT NUMBER(S): _____ <small>(use alphabetical suffixes for multiple items in same NBS)</small> | | | |
| RECOMMENDED ACTION: _____ _____ _____ | | | |
| APPLICABLE RFQ PROVISIONS: _____ <small>(attach markups)</small> | | | |
| IMPACT: (Check appropriate block and provide supporting rationale) | | | |
| RISK | | <small>If yes, how?</small> | |
| TECHNICAL | NO <input type="checkbox"/> YES <input type="checkbox"/> | _____ | _____ |
| SCHEDULE | NO <input type="checkbox"/> YES <input type="checkbox"/> | _____ | _____ |
| COST | NO <input type="checkbox"/> YES <input type="checkbox"/> | _____ | _____ |
| PRODUCTION | | | |
| SCHEDULE | NO <input type="checkbox"/> YES <input type="checkbox"/> | _____ | _____ |
| COST | NO <input type="checkbox"/> YES <input type="checkbox"/> | _____ | _____ |
| OPERATIONS & SUPPORT | | | |
| CAPABILITY | NO <input type="checkbox"/> YES <input type="checkbox"/> | _____ | _____ |
| COST | NO <input type="checkbox"/> YES <input type="checkbox"/> | _____ | _____ |
| COG: NAVAIR _____ DAC _____ | | | |
| ESTIMATED COST IMPACT IN FY-04 \$: | | | |
| | NAVY _____ | DAC _____ | JOINT _____ |
| DISPOSITION: (Hehman and Clepper) | | | DATE: _____ |
| | NAVY | DAC | COMMENTS |
| APPROVED | <input type="checkbox"/> | _____ | _____ |
| AMENDED | <input type="checkbox"/> | _____ | _____ |
| DEFERRED | <input type="checkbox"/> | _____ | _____ |

Source: [Ref. 32]

Figure 13. Risk Assessment

contractor, Douglas Aircraft Company, on 2 October 1984.
[Ref. 30]

G. STREAMLINING RESULTS

There was a concerted effort made by T-45TS program office to reduce costs from the time the source selection process was completed in 1981. An initial scrub of the requirements was conducted then to ensure that only the hardware items considered essential would be included in the contract. This involved a review and evaluation by both the Chief of Naval Education and Training and the Chief of Naval Air Training and the program sponsors in the Office of the Chief of Naval Operations to what requirements absolutely must remain in the contract, and which could be dropped out and have the T-45TS still perform the designated mission.
[Ref. 29]

During the demonstration/validation phase further cost reductions were made by deleting a number of items such as an aerial demonstration trainer, head-up and multimedia displays and an airborne computer. This resulted in a reduction of \$83 million, from \$810 million to \$727 million. Costs were later further reduced below the goal of \$450 million to \$438 million. [Ref. 29] A decision was made to switch from organic logistic support to contractor maintenance, which also resulted in significant cost savings.

However, the three areas which were most fruitful for the streamlining effort were specifications, data

requirements and testing (see Figure 14). There were 6,000 potential specifications (per General specification SD-24L) which were initially reduced to 322 specifications, prior to the Tiger Team effort. [Ref. 33] These 322 specifications were cited in the Request For Proposal. Following the streamlining efforts by the Tiger Team, the number of specification was reduced to 281. Currently 75% of the remaining 281 specifications have been tailored. Approximately 20% of the referenced documents are existing British engineering documents. [Ref. 33]

The data requirements were reduced from 530 items to 251 items. Twenty of the requirements were combined at the systems level, so as to reduce duplication of effort. More than 50% of the data requirements are to be submitted in contractor format as opposed to requiring a contractor to follow a specific format for the submission of government data. [Ref. 33]

The third major area of reduction was in the testing area. The number of ground test articles decreased from 3 to 2. This was accomplished by combining the drop and static test articles, and also by moving the fatigue test article to the front end of production in order to use a more representative airframe for fatigue testing. [Ref. 32]

The number of flight test aircraft decreased from four to two, and the number of contractor flight test hours also

T-45TS Development Program Comparison

| | BEFORE RESTRUCTURE | AFTER RESTRUCTURE | DELTA |
|---|-----------------------|------------------------|--------|
| FSED CONTRACT TYPE | CPIF | FFP | |
| GROUND TEST ARTICLES | 3 | 2 | -1 |
| FLIGHT TEST AIRCRAFT | 4 | 2 | -2 |
| FLIGHT TEST HRS | | | |
| CONTRACTOR | 623 | 411 | -212 |
| NAVY DEVELOPMENT | 160 | 160 | 0 |
| NAVY TECH EVAL | 90 | 90 | 0 |
| NAVY OPTEST | 40 | 40 | 0 |
| AIRFRAME DESIGN | | BASICALLY UNCHANGED | |
| ENGINE DESIGN | | SIMPLIFIED | |
| GTS DESIGN | | CHANGED | |
| SIMULATORS | | SIMPLIFIED | SLIGHT |
| CAI | | SIMPLIFIED | SMALL |
| TIS | | SIGNIFICANT CHANGE | LARGE |
| DATA REQUIREMENTS | 530 | 251 | -279 |
| SPECIFICATIONS | 322 | 281 | -41 |
| RISKS | | | |
| DESIGN | LOW | LOW | UNCH |
| SCHEDULE | LOW | MODERATE | INC |
| CONCURRENCY | MODERATE | LOW | DEC |
| PROGRAMMATIC | LOW/MOD | MODERATE | INC |
| CONTRACTOR | LOW | LOW/MOD | INC |
| INVESTMENT | | | |
| LOGISTICS | LOW/MOD | LOW | DEC |
| COST | LOW/MOD | LOW | DEC |
| UNCH = UNCHANGED; DEC = DECREASED; INC = INCREASED; MOD = MODERATE | | | |

Source: [Ref. 29]

Figure 14. T-45TS Development Program Comparison

decreased by 212 hours, from 623 hours to 411 hours. [Ref. 32]

The risks associated with the program were altered by both the decision to change the type contract and by the streamlining or restructuring effort (see Figure 14).

The schedule risk increased as the time to first flight was shortened, there was simply less time in which to accomplish all which needed to be accomplished. However, the risk associated with the concurrency between development and production decreased as there was less overlap between the two phases.

Much of the financial risk has been shifted from the government to the contractor by the decision to change the contract type from a cost-plus-incentive fee to firm-fixed-price.

The T-45TS program to date appears to be a successful example of what streamlining a program can accomplish. However, there were two important points which need to be remembered. First, the T-45TS program is a derivative program, and therefore much of the risk associated with state-of-the-art technology did not have to be addressed. Second, there was a distinct advantage to working with only one contractor, the McDonnell Douglas Aircraft Company.

VI. ARMY STREAMLINED ACQUISITION PROGRAM (ASAP)

Acquisition streamlining, as viewed by the Army Materiel Command, has a slightly different focus than it has in the other services. In the Army's view, acquisition streamlining is one of seven combined initiatives which are part of the Army Streamlined Acquisition Process, or ASAP (see Figure 15).

ASAP is designed to improve the way the Army Materiel Command (AMC) does its business. Under the leadership of Gen. Richard H. Thompson, AMC is committed to not doing business as usual. For many of the same reasons cited earlier in this thesis, the Army has undertaken initiatives to streamline or otherwise improve the acquisition process.

The Army has gone farther than any of the other services in defining and embracing streamlining. It is not only looking to streamline by tailoring requirements or eliminating accidentally referenced or premature requirements, it is looking to streamline the entire acquisition process. For purposes of this discussion, each of the seven elements of the Army Streamlined Acquisition Program will be discussed separately.

A. NON-DEVELOPMENTAL ITEMS (NDI)

The Army has been moving increasingly in the direction of NDI in the past few years, and is actively involved in

Army Streamlined Acquisition Process Characteristics of Selected Future Systems

| Streamlining Characteristics | 120-mm Mortar System | ATACMS | AAWS-M | MSE | FMTV | LHX |
|--|-------------------------|--------|--------|-----|------|-----|
| 1. Use of nondevelopmental item (NDI) procurement | X | | | X | X | |
| 2. Low risk technology selected for development; pre-planned product improvement (PPI) as future tech driver | | | | X | X | |
| 3. Reorientation of formal milestones (e.g., elimination of demonstration/validation; establishment of proof of principle) | | X | X | | | |
| 4. Performance-oriented/streamlined requirements and/or specifications; elimination of unnecessary contract data items | X | X | X | X | X | X |
| 5. Utilization of early troop demonstrations | | X | | | | |
| 6. Use of hard-tooled prototypes to smooth transition to production | | X | | | | |
| 7. Staff draft requirements documents and/or RFP (request for proposal) with industry | X | X | X | X | X | X |

Explanation of Terms

ATACMS Army Tactical Missile System
AAWS-M Advanced Airborne Weapon System Medium
MSE Mobile Subscriber Equipment
FMTV Family of Medium Tactical Vehicles
LHX Light Helicopter Experimental

Source: [Ref. 34]

Figure 15. Army Streamlined Acquisition Process

procuring the Mobile Subscriber Equipment (MSE) through the use of NDI.

In June of 1986, the Packard Commission made a recommendation in its final report to the president, concerning the expanded use of commercial products by the Department of Defense. [Ref. 35]

What it proposed was an inversion of DoD buying policy-- buy commercial or non-developmental items which are readily available in the commercial marketplace as opposed to relying on "excessively rigid military specifications." The Packard Commission recommended that:

DoD should make greater use of components, systems and services available 'off-the-shelf.' It should develop new or custom-made items only when it has been established that those readily available are clearly inadequate to meet military requirements. [Ref. 35]

One of the major arguments for military specifications has always been that they guarantee a certain level of quality by purchasing off-the-shelf type items as opposed to items made to military specifications. DoD is essentially making private industry responsible, and accountable, for the quality of the items purchased by DoD. One of the difficulties will be how DoD will measure the quality of items purchased off-the-shelf.

Traditionally, it has been the government's practice to "inspect quality in," rather than require industry to design or produce quality products. The Packard Commission took exception to this, as it is the least efficient means of

exception to this, as it is the least efficient means of increasing quality. With the increased use of buying commercial items, DoD will have to look for a new means of ensuring quality.

One means of ensuring quality, is for DoD to accept certification of a producer by a civilian organization which will certify that the producer and his processes meet certain approval levels. This would permit significant cost savings in terms of reduced number of DoD inspections.

DoD must also ensure that the application of the product being procured off-the-shelf is clearly defined, so as to preclude mismatches between the product and the environment it will have to function in.

Overall, there appears to be several good reasons to purchase NDI: lower cost, less schedule risk, less technological obsolescence, and less time to acquire a system. By shifting the burden of responsibility for quality from the government to the contractor, it appears that DoD has a greater chance of acquiring quality products than in the past, and at a lower and less risk for the government.

On the other hand, it appears that evaluating a proposal for an NDI system would be difficult without having MIL-specifications or MIL-standards to measure it against. This would appear to open the evaluation to being more subjective and flexible, as the decision to choose one product over

another must be based on the government's decision of what will best meet or satisfy their requirements.

Also, the potential impact of NDI on the DoD logistics system must be addressed. The purchase of off-the-shelf items in large quantities will definitely affect the supply system, as it will generate masses of new stock numbers, or manufacturer's parts numbers. The Military Parts Control Advisory Group (MPCAG) who administers the DoD Parts Control Program, cites an example of one MIL standard part which can be used as a substitute for 38 manufacturer's part numbers. [Ref. 36]

There also may be a trend toward increased costs in order to maintain adequate stockage levels of parts. In the same example cited above, MPCAG found that there was a reduction in cost of 5:1 experienced by those utilizing the MIL specification in the procurement of the part. (Ref. 36]

It must also be recognized, and accepted by the users, that the NDI approach provides a system which may not meet all the desired features, at least not at first. However, through the use of another ASAP initiative, Preplanned Product Improvement, the system may eventually fulfill all the desired features.

Therefore, in order to NDI to be part of a successful acquisition strategy, it must have total support from the user community, the acquisition team, and the senior level of command. The user and the senior level of command must

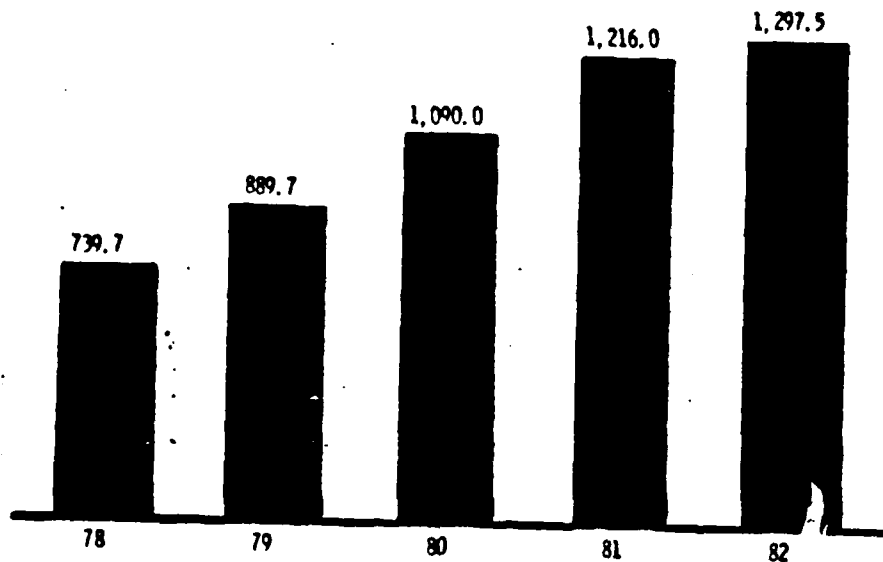
be willing to accept the tradeoff between cost and schedule on the one hand, and not quite as desirable a product on the other. Depending on the type of product or equipment being procured, this may be acceptable or not. It is a decision which impacts all phases of the life cycle of the item being procured.

B. PREPLANNED PRODUCT IMPROVEMENT

The heart of the Army's streamlined acquisition process is Preplanned Product Improvement (P3I) an evolutionary development strategy. It is accomplished by reducing the current requirements and planning for incremental improvements. The improvements should plan for, or take into account, any perceived threat changes or new state of the art technology which has become available. Through the use of P3I, the Army is able to field a weapon system sooner than one which is being developed by the traditional means of development.

The concept of P3I is not a new one. The Army has never acquired a major system that wasn't improved during its active life cycle. The current advanced state of technology has not changed this, if anything it has caused a fairly constant increase since 1978, as can be seen in Figure 16. The costs of these improvements are significant as they averaged over \$1.0 million during each of 1980, 1981, and 1982. [Ref. 37]

FUNDING REQUIREMENTS
ARMY PRODUCT IMPROVEMENT PROGRAM
(ALL APPROPRIATIONS \$ IN MILLIONS)



Source: [Ref. 37]

Figure 16. Funding Requirements

What is relatively new, though, is "preplanned" improvements. That is the critical difference between the revolutionary method of product improvement and the evolutionary.

The revolutionary means of developing improvements is the way the Army has traditionally done business. The improvements had to be developed in much the same way as the systems themselves. This is a costly, time-consuming means of improving a system, as the product improvements average 5 1/2 years for major systems, which is about half the time it takes to develop a new system. [Ref. 37]

The evolutionary means of preplanning for improvements is a time-phased method of meeting the requirement. In order to best utilize P3I, the user must be willing to reduce the requirement in order to not push the state of the art, and to plan for phased incremental improvements over time.

By consciously planning ahead for improvements, the user will not only receive the system faster, in the long term he will end up with a system which does more. For example, look at Figure 17 which demonstrates the difference in the two types of development.

The top layer of the chart is the revolutionary way of developing weapon systems, or the way the Army has traditionally fielded its weapons. The bottom layer demonstrates the evolutionary approach, or P3I. By utilizing P3I the Army is able to move the initial operation capability

**MATERIEL DEVELOPMENT:
REVOLUTIONARY VS EVOLUTIONARY
PRODUCT IMPROVEMENTS**

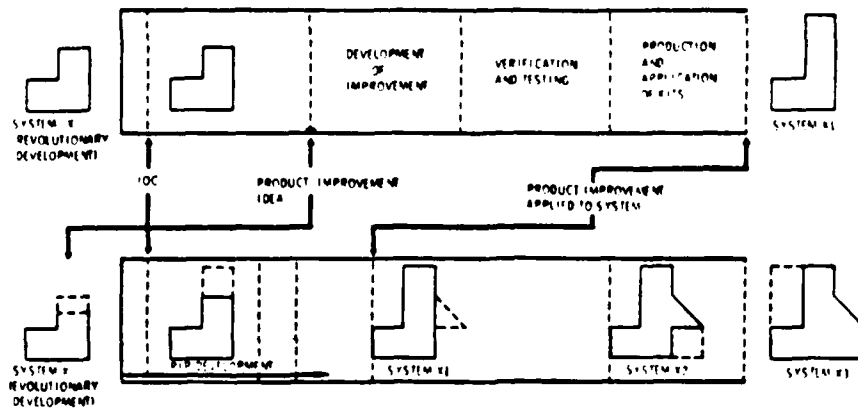


Figure 17. Materiel Development: Revolutionary vs. Evolutionary

forward, so to field the system faster. This does not field a less capable system against a more capable threat. What it does is produce a responsive system against a less technologically advanced enemy by virtue of fielding the system sooner. It also provides, and plans, for block upgrades which result in a better system technologically over the long term.

There are several keys to ensuring success with P3I. The first is the user's understanding and acceptance of the process as being one of incremental changes which are phased in. The second key is an accurate assessment of the projected changes in both technology and the threat. Funding is the last key, and without it the others would be useless. There must be firm commitments from the user community to plan and budget for the incremental changes, otherwise the system would quickly become obsolete technology.

The objective of Preplanned Product Improvement is to extend the useful service life of weapon systems. As such it will generate savings, both in time and cost, which is what the ASAP program is all about.

C. REORIENTATION OF FORMAL MILESTONES

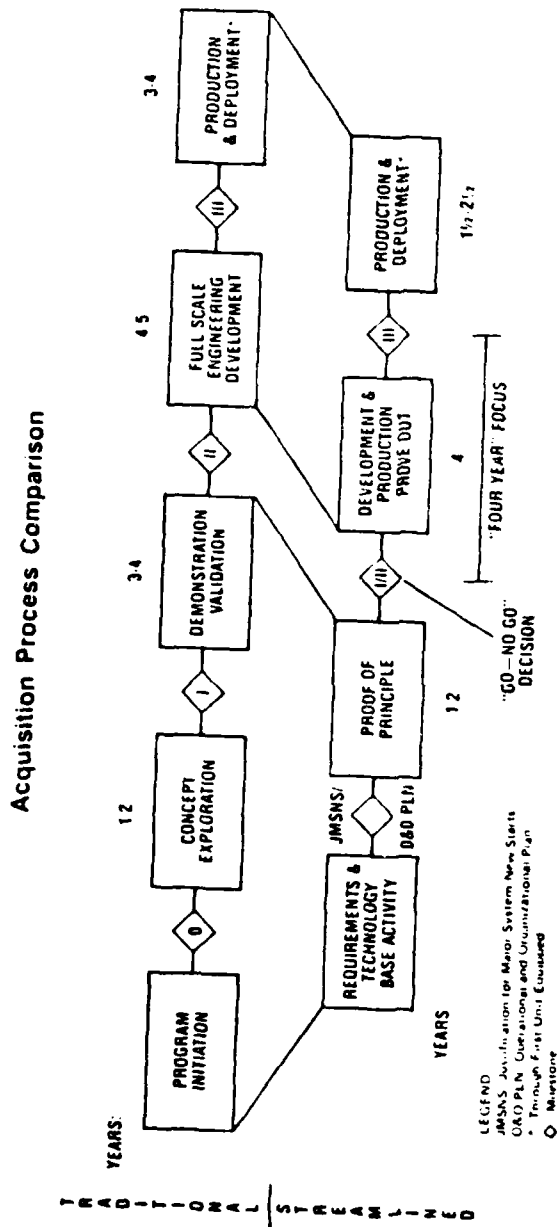
The streamlining of the acquisition process is a revolutionary part of the ASAP designed to shorten the time between the initiation of a new requirement and the fielding of the new system or equipment.

In the past, development time was measured from the beginning of advanced development to the Initial Operation Capability (IOC). Under ASAP, that is no longer the case as it eliminates the demonstration/validation phase and Milestone II from the process and restructures the other two research and development phases (see Figure 18). This means a development program will go from the "proof-of-principle" phase to a collapsed Milestone I/II which will be held at the entry to full development and will represent a "go/no go" commitment to the program. [Ref. 34]

The "proof-of-principle" phase will be a combination of what is currently known as two phases: concept exploration and demonstration/validation. It will employ the extensive use of prototypes in technical demonstrations in order to verify both the operational concept and the hardware in the early stages of the program.

The prove-out process will also include prototypes in the hands of user troops. Troops of such units as the 9th Infantry Division or Ft. Hood, will be utilized to demonstrate the maturity of the technology prior to entering development.

The four year focus of the ASAP will begin with the Milestone I/II decision and end with the Milestone III decision. In other words, the development and production prove-out phase is the four year goal.



Source: [Ref. 34]

Figure 18. Acquisition Process Comparison

Throughout the entire process, testing will be conducted as efficiently as possible by utilizing a common test data base. The data base will provide actual results to everyone involved, and will permit the dissemination of test data more quickly. It will also provide for better responsiveness and evaluation. This is not to say that testing will not be conducted in an independent and scientific environment, just that those tests which can be conducted more efficiently, will be.

The final link in the streamlined acquisition process is the formation of the Laboratory Command (LABCOM) to oversee and coordinate research efforts. It is planned that the creation of LABCOM will permit the Army to recognize and explore further these areas which are currently under development and show the most promise. [Ref. 34]

The ASAP tailored development cycle is a dramatic change toward shortening the acquisition process.

D. STREAMLINED REQUIREMENTS

The Army's approach in this area has been similar to what is being done in the other services, it is utilizing the talent available in private industry by telling the contractor what it wants, and not how to do it, or how to manage his business.

The Army has been doing this through the increased use of performance specifications which tell the contractor what the system is supposed to do, as opposed to telling the

contractor how to build it. Other ideas which industry has been providing are recommendations to eliminate unnecessary contract requirements or contract data items, and tailored specifications and standards.

The RFP for the Anti-Task Weapon System-Medium (AAWS-M) was one of the first RFP's to be streamlined. The results, cited in a June 1986 article of Government Executive, showed the RFP had decreased from 498 pages to 219 pages. [Ref. 38]

E. UTILIZATION OF TROOP DEMONSTRATIONS

The utilization of user troops to demonstrate the maturity of technology prior to production was touched briefly upon in the discussion of the tailored development process.

The Army is concerned with the man-machine interface requirements, impact on command and control, soldier acceptability as well as the hardware performance and therefore, is planning to utilize the 9th Infantry Division test bed in order to test the technology. [Ref. 39]

By utilizing a prototype system in the hands of troops prior to development, the Army will be able to not only test the maturity of the technology, it will also be able to test the operational concepts, and to gain experience in how the system will perform in the field environment.

F. SMOOTH TRANSITION TO PRODUCTION

The Army is looking to utilize prototypes built on hard production tooling wherever possible. Gen. Thompson, speaking in the August edition of ARMY, stated,

We will include prove-out of the production process as part of our full-scale development effort because we have learned the hard way that it pays off--in time, money, and credibility--to do this before we enter production. [Ref. 34]

This form of testing is intended to provide valuable information and assist in the certification of operational suitability needed to go into full-scale production. It was also a recommendation of the Packard Commission. [Ref. 35]

G. STAFF DRAFT REQUIREMENTS DOCUMENTS AND/OR RFP

Draft Request For Proposals (RFP's) are being used by the Army to solicit input from private industry prior to formally issuing the RFP. To date, draft RFP's have been used for the engine and airframe proposals for the Light Helicopter Family (LHX), the 120 millimeter Anti-Tank Weapon System-Medium (AAWS-M), the 120 millimeter Mortar System, the Mobile Subscriber Equipment (MSE) and the Army Tactical Missile System (ATACMS). [Ref. 40]

The process for utilizing a draft RFP for the Army Tactical Missile System was an iterative process. The Army first ensured that the requirements for what would become the Army Tactical Missile System were only the minimum essential. This involved extensive coordination between the user community and the acquisition team.

A decision was made that Preplanned Product Improvement would be part of the acquisition strategy, and this had to be clearly communicated to industry along with the other requirements. Contractors were also encouraged to use off-the-shelf type items in their proposals.

The draft Request for Proposal for the Army TACMS full scale development was reviewed by potential contractors, and the contractor's comments were evaluated by the "various major subordinate command functional organizations . . . [Ref. 40] The changes were incorporated prior to final release of the RFP.

The use of draft RFP's is a means of utilizing the talent available in private industry to best meet the requirements of the Army. It allows prospective contractors the opportunity to identify elements in the proposal that they believe add cost with little or no resulting benefit or to propose alternate solutions without being under the threat of being found non responsive.

It also places the Army in the role of not telling the contractors how to manage or how to perform. The Army simply provides the requirements to the contractors who will then make the appropriate tradeoffs among cost, schedule and performance, and design, what they believe is a system which will best satisfy the Army's needs.

H. SUMMARY OF THE ASAP INITIATIVES

The Army to date has embarked on an extremely ambitious program to streamline the acquisition process.

Technology has been changing so rapidly and the acquisition process has become so lengthy, that weapon systems have a good possibility of being obsolete before they are fielded. In addition to the rate at which technology has been changing, the Army is also trying to handle outdated or overage specifications and standards which are being used to procure the equipment or weapon systems. Add to that the change in the perceived threat, and the shift in direction and focus which emanates from the Congress, and "change" has become a significant issue.

The Army Streamlined Acquisition Process is a means of handling the complex issues of technological change, obsolete, outdated specifications and standards and an extremely cumbersome acquisition process. It involves not only substantial changes in how the Army conducts its acquisition "business," it also involves significant shift in attitudes about the role of the program manager, user and the contractor, who should bear the risk and responsibility for performance.

ASAP is directed toward streamlining the entire acquisition process, beginning with how the user views the requirements, whether he can be "satisfied" with a nondevelopmental type system or one which employs the concept of

preplanned product improvement rather than developing an entirely revolutionary system which pushes the state of the art in technology and may take 10-15 years to complete the acquisition process.

ASAP is designed to give the Army flexibility in procuring affordable, reliable systems by maximizing the resources available in both the Army community and private industry in order to best support the needs of the soldier.

VII. IMPLEMENTATION OF DODD 5000.43:
ACQUISITION STREAMLINING

Acquisition streamlining has been implemented. This study has focused on a limited number of programs in which streamlining has been utilized to date. The use of streamlining in a few pilot programs, while important, doesn't really serve as evidence that streamlining has been implemented by the Department of Defense. Only the incorporation of streamlining into the management policies and procedures of the Department of Defense so that it becomes institutionalized, will do that.

OSD issued the DoD Directive 5000.43, "Acquisition Streamlining," on January 15, 1986. It established that the policy for acquisition streamlining and specifically tasked the Heads of the Military Departments to:

- a. Designate an advocate (Flag rank or Senior Executive Service) within each Department
- b. Ensure the review of all applicable systems and equipment to ensure compliance with acquisition streamlining
- c. Ensure appropriate training of acquisition personnel
- d. Develop a program to recognize outstanding performance in acquisition streamlining
- e. Prepare an Acquisition Streamlining Plan, updated annually, to be forwarded to ASD (A&L).

What this chapter will describe is how each of these taskings has been implemented by the Army and the Navy.

There has been an immeasurable amount of publicity created about streamlining, but until it is institutionalized in the management policies and practices, business will continue as usual. Each of the above mentioned taskings will be explored separately, and the best examples of implementation will be cited.

A. DESIGNATE AN ADVOCATE

1. Army--Mr. Roy D. Greene
2. Navy--Mr. Gerard Hoffmann

B. ENSURE REVIEW OF ALL APPLICABLE SYSTEMS AND EQUIPMENT AT EACH PHASE

The new (September 1986) Army Materiel Command Regulation 70-5, "Materiel Acquisition Decision Process (MADP) Reviews," discusses MADP Reviews which should ensure that: [Ref. 41]

1. Both NDI and ASAP initiatives have been considered in selecting the acquisition strategy.
2. DoDD 5000.43 is incorporated into the acquisition strategy.

The Secretary of the Navy issued SECNAVINST 4210.6, November 20, 1985, subject: Acquisition Policy [Ref. 42]. It required the Specification Control Advocate General (SPECAG) to certify, prior to Full Scale Engineering Development, "that development specifications, including the contract data requirements list, have been reviewed and tailored." [Ref. 42]

In order to accomplish this, the commander of each appropriate activity must provide a certification certificate to the SPECAG. Then the SPECAG must in turn, certify to the CNO, who also then certifies to the Secretary of the Navy that the requirements have been streamlined.

Secretary Pyatt, in a memorandum dated April 2, 1986, also recommended to commanders of the major system commands that they "consider streamlining efforts during (your) internal program reviews." [Ref. 43]

Another example of reviewing "systems" would be the individual system commands looking internally at how they could best utilize acquisition streamlining. One command, NAVSEA, has done this.

Under the direction of VADM Webber, the Chief Engineer of the Navy, and Mr. W. Tarbell, Deputy Commander for Acquisition, Planning, and Appraisal, NAVSEA established a task group to define how to best institutionalize acquisition streamlining within NAVSEA. The objective was to determine if the requirements in the typical NAVSEA acquisition solicitation can be streamlined and, if so, the best approach to achieve the goal. [Ref. 44]

The final report was issued on July 31, 1986. It contains a number of excellent recommendations and comments, which "will minimize requirements and the associated costs of (our) programs without compromising quality." [Ref. 44]

It will also be used to assist in implementing streamlining within NAVSEA.

C. ENSURE APPROPRIATE TRAINING OF ACQUISITION PERSONNEL

The Specification Control Advocate General of the Navy issued in September, 1986, an Acquisition Streamlining Guide [Ref. 7]. It is a comprehensive discussion of the Streamlining Initiative, written to be used by those who will actually be involved in the process of teaching and utilizing streamlining.

It begins with an identification of the need for streamlining and what the objectives are. Then it introduces the basic principles behind streamlining, discusses the application of these principles, and concludes with several case studies which can be utilized to practice streamlining.

It also identifies all the Department of the Navy Streamlining Advocates by major command. They would be the ones responsible for training the personnel within each command. In the course of the research for this study, the Streamlining Advocates for NAVAIR, NAVSEA and SPAWAR were interviewed. They provided excellent insights into how each command was organizing and conducting their training.

SPAWAR has instituted an aggressive education plan within the command. They view education and training as an integral part of institutionalizing the process, and participation by all management, engineering and logistics personnel is mandatory. [Ref. 45]

Four seminars were held between March and June, 1986, for top level and middle level managers. One hundred fifty-six managers and supervisors completed the one hour session. Also, five working level classes and workshops were conducted for 79 engineers and logisticians, and another 226 are scheduled to attend. [Ref. 45]

NAVSEA has focused on the improvement of specifications, both from the Navy's point of view as the buying organization, as well as from the contractors focus as the producer or actual user of the specification.

Training courses in the preparation of specifications and standards are being conducted for NAVSEA personnel, emphasizing streamlining. The intent is to provide engineer specifications writers with information and guidance to assist not only in the preliminary planning, but also in the evaluation of the cost and effects of specifications on shipbuilding.

The other aspect of specification streamlining is industry participation, which involves a learning process. NAVSEA has recognized this and has actively sought industry participation and involvement by soliciting comments from thirteen major shipbuilders on the General Specifications for Ships. It has also conducted visits with four shipbuilders in order to secure the contractors assistance in streamlining. [Ref. 46]

This program to improve specifications appears to be working. The number of specifications which have a high priority for updating are down by 64%, while the number of specifications being updated are up by 72% (these figures were current as of September 4, 1986). [Ref. 46] A more detailed explanation can be seen by reviewing Figure 19.

D. DEVELOP A PROGRAM TO RECOGNIZE OUTSTANDING PERFORMANCE IN ACQUISITION STREAMLINING

The March-April 1986, Program Manager, featured an article entitled, "Streamlining Has Begun to Pay Off" [Ref. 47]. It featured the Deputy Secretary of Defense, William H. Taft IV presenting four Department of Defense Streamlining Excellence Awards at the Second National Conference on Acquisition Streamlining.

The program managers were being recognized for the outstanding effort each of them had accomplished in the area of acquisition streamlining. Two of the program managers recognized were the program managers for the T-45TS and the LHX programs.

E. PREPARE AN ACQUISITION STREAMLINING PLAN

On August 8, 1986, Everett Pyatt, Assistant Secretary of the Navy (Shipbuilding and Logistics), issued the Navy Program Plan for Acquisition Streamlining [Ref. 48]. In the Memorandum which accompanied the plan, Secretary Pyatt stated,

STATUS AND PRIORITIES

JUNE 1988

| | PRI 0 | Δ | PRI 1-4 | Δ | PRI 5-7 | PRI 8 | PRI 9 | UN- ASSIGNED | TOTAL |
|----------------------|-------|------|---------|-------|---------|-------|-------|-----------------|-------|
| GEN SPECS | 64 | +12 | 30 | -17 | 25 | 0 | 98 | 0 | 208 |
| FED SPECS | 66 | +26 | 9 | -17 | 8 | 6 | 32 | 1 | 111 |
| FED STDS | 0 | | 0 | -2 | 1 | 0 | 0 | 0 | 1 |
| MIL SPECS | 842 | +241 | 226 | -316 | 647 | 261 | 1399 | 13 | 3378 |
| MIL STDS | 88 | +6 | 63 | -114 | 147 | 67 | 283 | 2 | 647 |
| MIL HDBKS | 18 | +3 | 8 | -7 | 9 | 1 | 9 | 0 | 46 |
| DDS | 40 | +4 | 8 | -13 | 21 | 3 | 26 | 1 | 98 |
| STD/TYPE DRAWINGS | 713 | +477 | 406 | -832 | 724 | 298 | 801 | 318 | 3269 |
| OTHER | 30 | +4 | 12 | -37 | 15 | 20 | 19 | 6 | 101 |
| TOTAL | 1837 | +771 | 761 | -1355 | 1587 | 638 | 2677 | 340 | 7848 |

Δ CHANGES FROM OCT 86 FIGURES
 + MORE DOCUMENTS THAN OCT 86
 - FEWER DOCUMENTS THAN OCT 86

PRI 0 - BEING UPDATED
 PRI 1-4 HIGH PRIORITY FOR UPDATE
 PRI 5-7 - LOW PRIORITY FOR UPDATE
 PRI 8 - SCHEDULED FOR CANCELLATION
 PRI 9 - UP TO DATE

Source: [Ref. 46]

Figure 19. Status and Priorities

the principles of acquisition streamlining . . . are necessary for good business and must be forcefully applied throughout the acquisition process. The potential for savings is significant, and we must not compromise our ability to provide the Fleet with the quantity and quality of weapons systems needed. [Ref. 48]

The Navy Plan states, "Acquisition Streamlining is mandatory and applies throughout the Department of the Navy for all systems and equipment acquisitions." [Ref. 48] It continues by listing seven items under the Plan of Action:

1. In each SYSCOM, establish a program that will identify and review procurements by methodically challenging any contractual documents for excessive requirements as well as provide for remedial actions.
2. Institute formal awareness programs for both top management and working level personnel. This should include seminars and training courses.
3. Establish formal recognition programs to acknowledge personnel contributions in eliminating or reducing non-cost-effective contract requirements.
4. Promote and encourage joint military service and DLA cooperation in efforts to achieve the Acquisition Streamlining Initiatives and to provide for the cross-fertilization of ideas, techniques and procedures.
5. Establish dedicated funding resources for the Navy's Acquisition Streamlining Initiatives and efforts. Simultaneously, emphasize support for the Standardization and Value Engineering Program's budgets and efforts. This emphasis is needed to review and challenge the requirements in specifications, standards, engineering drawings and other standardization documentation, during developing design and production phases.
6. In each system's command, establish a central office and identify dedicated personnel responsible for the administration of the respective SYSCOM Acquisition Streamlining Initiative.
7. Conduct a semi-annual flag-level review of each system's command's overall progress in promoting and enhancing acquisition streamlining. This review is to be chaired by ASN (S&L) with the Director, ONAS and

Specification Control Advocate General in attendance.
[Ref. 1]

The Navy plan establishes specific objectives within the Department of the Navy for acquisition streamlining. The first several items echo the taskings of DoDD 5000.43, as in reviewing requirements, establishing training and developing formal recognition programs for outstanding performance in acquisition streamlining.

The Navy plan goes farther though. It also provides for joint military and DLA cooperation in streamlining. Then, too, it clearly instructs each SYSCOM to not only establish a program to review requirements, but also institutionalizes streamlining by charging the SYSCOMs to establish an office and personnel, and most importantly, to dedicate funds to the effort.

F. SUMMARY

Acquisition streamlining is in the process of being implemented and institutionalized in not only the targeted pilot programs, but also in the lower levels within the individual services and commands.

VIII. CONCLUSIONS, RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH

A. OVERVIEW

In the process of this study, a number of programs and initiatives were studied. Each approached the concept of acquisition streamlining from a slightly different aspect. Some looked to streamline only the specifications, others looked at reducing or combining the testing requirements, utilizing contractor maintenance and logistic support, while others looked to rewrite the entire acquisition process.

There is a measure of worth in all the approaches, as the lessons learned can be a source of aid for future streamliners. What is important to remember is that there is more than one to streamline. Streamlining involves tailoring the requirements, specifications and standards to best fit each program, remembering that each program is basically unique and therefore what is the best solution for one, is not necessarily the best solution for all.

B. CONCLUSIONS

This research has led to a number of conclusions regarding the implementation of the Streamlining Initiative, and its effects.

Conclusion 1. Acquisition streamlining, per DoDD 5000.43, is being implemented. It has, and is, being used

to specify the contractual requirements in terms of performance specifications, rather than design specifications, as evidenced by the Army Tactical Missile System (ATACMS) request for proposal. It is also being used to tailor the contractual requirements to the unique circumstances of each program, and limit the contractual applicability of referenced documents, which can clearly be seen with the T-45TS program.

Conclusion 2. Acquisition streamlining is being institutionalized. It has become part of the regulations and instructions, as evidenced by the discussion in the chapter on the implementation of DoDD 5000.43. It was obvious that some of the services have gone farther with their plans, than others.

Conclusion 3. There exists a number of impediments to streamlining. The greatest of these is the attitude, "that we have always done it this way, and it worked, why change?" Once a requirement becomes written on a printed page, it may as well be written in concrete. The majority of federal employees, military or civilian, are conditioned to repeating the lessons learned in the past, especially if they were successful. In order to effectively utilize the concept of streamlining, we must be willing to take risk, and our system, whether it be military or civil service, does not generally reward risk-takers.

Therefore, the difficulty is two-fold. First, we must encourage innovation and creative solutions to meeting requirements, and then we must also recognize that there is a price which may have to be paid for daring to be different.

Conclusion 4. Specifications and standards are the "corporate memory" of DoD. Many of the specifications and standards were written as a result of specific lessons learned, and it is difficult to find someone conversant with the requirement who can also be objective.

Conclusion 5. The Preplanned Product Improvement initiative is absolutely crucial to the Army Streamlined Acquisition Program. Given the current environment, the approach for new weapon systems will more than likely not include new starts. Therefore, the technological improvements will have to come from Preplanned Product Improvements. This will permit block upgrades every 3-5 years, if the funding has been planned, programmed and budgeted for. Without funding for the P3I, the weapon systems fielded will quickly become obsolete technology.

Conclusion 6. The use of NDI together with P3I can assist in fielding a less costly weapon system sooner. By utilizing NDI together with P3I, the Army will not be pushing the state of the art in technology, which will decrease the cost and schedule risk. However, by planning to incorporate changes as they become available on the

market allows the system to be dynamic rather static. This permits the system to adapt to changes in the perceived threat.

Conclusion 7. The reorientation of the formal milestones during the major weapon system acquisition process actually extends the time for concept exploration. This appears to be a means of granting the Army more time to explore and prove the technology before entering full development. This permits more time for the concept to be tested, and reworked prior to a firm commitment. As the majority of the life cycle costs are incurred during the design and development phases, this allows them to be given more consideration.

Conclusion 8. The use of draft Request For Proposals may cause a relook at how proposals are evaluated. The government is now looking at providing only performance requirements to the contractors, and permitting them to determine how to best satisfy the requirements. This is quite different from evaluating a proposal based on design specifications furnished to the contractors. Under this method, the draft proposal actually becomes the baseline against which the proposals are evaluated, and the decision becomes more subjective as there must be a determination of what best satisfies the government's needs or requirements.

Conclusion 9. The systems such as the T-45TS have not yet reached the point in their acquisition cycles during

which the significant cost growth or schedule slippages usually occur. It is very early yet to declare the acquisition streamlining effort a total success, though at this point in time, it appears to be working quite well.

C. RECOMMENDATIONS

As a result of this research effort, the following recommendations are presented.

Recommendation 1. A comprehensive training plan, similar to what NAVSEA and SPAWAR have instituted needs to be developed and implemented by all the services and commands. The two commands mentioned have established specific goals, training and implementation plans and are actively involved in educating their people in how to best utilize the streamlining concept. This is the only means of overcoming the greatest impediment to streamlining--attitude.

Recommendation 2. A basis for measurement, or evaluation, of streamlining effort needs to be devised. To date, there has been little concern for how a streamlining effort will be measured. Whether the basis for evaluation will be cost avoidance, number of specifications cited in the procurement document, number of NDI produced, number of Change Orders processed, cost or schedule variances or some other measures, needs to be addressed. As it is, programs are being cited as successes based on varying criteria.

Recommendation 3. There is a cost for streamlining, which may need to be taken into account when savings are

cited. The T-45TS streamlining effort involved extensive work by a joint government-contractor team. The use of draft RFP's is calling upon the contractors to utilize their staffs to streamline and make recommendations. All of this effort has a cost associated with it. It needs to be offset against any savings claimed in order to gain an accurate picture of the benefits or gains achieved by streamlining.

D. AREAS FOR FURTHER RESEARCH

Streamlining is addressing the tip of the iceberg. However, what lies beneath the surface is the entire Defense Specifications and Standardization Program and the organizations charged with the responsibility of writing and maintaining specifications and standards.

The "symptoms" of overage redundant, ambiguous, obsolete specifications and standards is being challenged by streamlining; the "problem" is to change how specifications and standards are generated. The organizations tasked with writing specifications and standards are highly decentralized, they report to, and work for individual commanders. The Defense Materiel Specifications and Standards Board (DMSSB) establishes broad guidance, but it is left to the individual standards writing groups to translate that guidance into objectives and action.

Each service, and DLA, are responsible for their own standards writing organizations. They each must budget,

fund, and staff their organizations. How this is done varies widely among the services and DLA.

The user communities are not involved in the writing of the standards to the extent they need to be, as standards writing has apparently evolved into a rather rigid documentation procedure rather than an engineering support function.

There needs to be further research done in the area of the Defense Standardization and Specification Program (DSSP).

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5